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A MONTHLY MAGAZINE

DEVOTED TO THE

PRESERVATION OF HEALTH, MENTAL AND PHYSICAL CULTURE.

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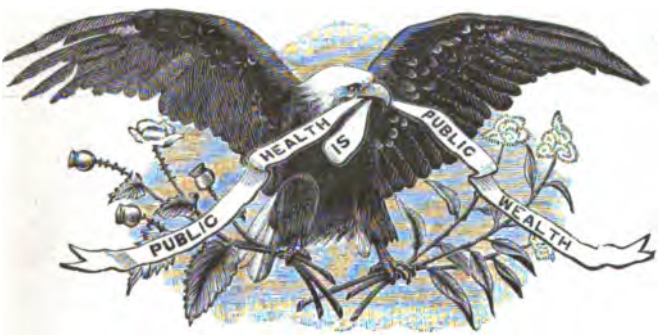

VOLUME XXXII. JANUARY TO JUNE.

A. N. BELL, A.M., M.D., Editor.

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HARRY KENT BELL, M.D., } Associate Editors.

BROOKLYN, N. Y.: A. N. BELL.
1894.

CATALOGUED
OCT 22 1894
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THE SANITARIAN.

JANUARY, 1894.

NUMBER 290.

PROGRESS OF PREVENTIVE MEDICINE.*

By JAMES F. HIBBERD, LL.D., M.D., Richmond, Ind.

PREVENTIVE medicine, in its wider sense, includes all measures to maintain health instituted under hygienic regulations and sanitation; but I shall content myself on this occasion by reference to the management for the suppression of contagious diseases.

ON CHOLERA PREVENTION.

Ten years ago the only known means of preventing the invasion of any country or city by cholera was to exclude every person and thing contaminated by the germs of the disorder. In 1884 cholera was epidemic and severe in Egypt, and was soon transported to Southern Europe. Germany, England, France, and Italy each appointed a commission of practical medical men and expert bacteriologists to inquire into the nature of the malady and devise means of prophylaxis. No better illustration of the rapid progress of preventive medicine and the manner of that progress can be desired than a study of the methods of investigation pursued by those commissioners and the formulated results of their labors. Their investigations began in Egypt, continued in Europe, and were complete in India, where cholera has its continuous renewal and perpetual home. The results of their labors were not entirely harmonious at first, but the unequalled Koch, at the head of the German commission, made a detailed report of the work and established the facts, the accuracy of which has been conceded by all parties.

* Abstract of Address on General Medicine, at Meeting of the Mississippi Valley Medical Association, October 12th, 1893.

Accordingly, we now know that the cholera germ is the spirillum choleræ Asiaticæ—commonly called the comma bacillus of Koch—that it is found in the human body only in the intestines of its victims, where it multiplies rapidly; that it is not communicated directly from person to person, but the alvine evacuations of the victims find their way, generally through water, into the bowels of susceptible persons, who then become additional victims; that this germ also finds a breeding place in damp soil and in stagnant pools and in running streams containing organic matter, and survives in pure water, but does not multiply there; that it is virile only within narrow thermal limits; that it holds its life by a frailer tenure than any other equally prolific and destructive pathogenic spirillum, being quickly destroyed by the official germicides, by drying, by acids, and by a temperature below 56° or above 126° F.

It is the application of this exact knowledge that has confined the cholera to the quarantine dominions at New York, thus preventing its diffusion in the United States; and it is a like application of this knowledge that has, on sundry occasions and at divers points in England and on the continent, enabled the authorities to confine the Asiatic plague to the single case in which it was discovered. And, per contra, it is ignorance of these established facts, or failure to use them, that permits the ravages of cholera at this time in Arabia, in Russia, and on the shores of the Mediterranean.

Every practitioner of medicine in this country should feel it an obligation to constitute himself a propagandist of the knowledge of the means of prevention of cholera among the populace, and when the people are thoroughly informed in this behalf and join intelligently and heartily with the health authorities in recognizing and managing the first case that may appear in any locality, the disease will be stamped out at that point, and then cholera can never again become epidemic in the United States.

YELLOW-FEVER.

Yellow-fever is another scourge that has been and still is being much studied, not with such satisfactory results touching the nature of its course as with cholera, but enough has been determined in regard to its nature to warrant the declara-

tion that it can be stamped out at any point where it may appear. All that is necessary to protect us from further invasion of yellow-fever is the watchfulness, the intelligence, the skill, and the devotion to duty everywhere that has been so successfully exercised for eight years by the health authorities at New Orleans.

It is known that yellow fever is an exotic in the United States, and that it comes to us almost exclusively from the inter-tropical islands and mainland on the eastern border of the Western Hemisphere, and it is a reasonable anticipation that the diligent expert investigation now actively prosecuted will presently yield us such knowledge of the nature of its germ and its nativity as will enable us to strangle it in the place of its birth. The pregnant idea of dealing with germ diseases, that have a localized origin, at the point of their generation was under consideration by the Pan-American Medical Congress at its first session in Washington in September, and it is just such great organizations as that, composed of men with enlightened minds, and courageous natures, that will work out the problems of sanitary science and art for the welfare of the world.

So far, we have considered prevention of disease on the line of keeping the susceptible people from coming in contact with the germs of disease ; but there is another phase of prophylaxis equally important, namely, preparing people artificially, so that although they come in contact with pathogenic germs, they will be able to resist them and suffer no ill—*i.e.*, render people immune against contagious disease.

The most notable example of this is the fruit of the acute observation of Dr. Jenner in discovering, about one hundred years ago, that milkmaids who contracted cow-pox were immune from small-pox ; and the American Medical Association has done itself honor in providing for a Jennerian centennial celebration in May, 1896.

The name of Pasteur need but be mentioned to recall the work he has done in the last decade, by virtue of vaccination against rabies in man ; and inspired by the genius and success of Pasteur many experimentalists in recent years have essayed to render people immune against cholera, yellow-fever, etc., by hypodermic injections of special cultivations of these germs respectively. None of these efforts have, however, succeeded.

A closely related line of experiments has been most diligently pursued by quite a list of distinguished investigators, in various parts of the world, based upon the theory that it is possible to produce, artificially, such a condition of the human system as exists after an attack of small-pox, scarlet-fever, whooping-cough, or other contagious disease that attacks man but once. Assuming that during an attack of such a disease there is something added to the system or subtracted from it, that renders it perpetually immune to that disease, the effort has been made to establish this immunity by making an equivalent change in the system by artificial means, that would not endanger life nor create serious suffering. It will be observed that this is but a slight modification of Jennerian vaccination, closely related to Pasteur's arrest of rabic intoxication, and not remote from the idea involved in the original claim for Koch's tuberculin. Encouraging progress has been made through experiments on the lower animals, but nothing definite has been accomplished in man.

The concept in the premises may be illustrated by reference to what has been done to simplify and extend the Jennerian vaccination. Dr. Sternberg took the blood serum of a heifer that had had cow-pox, and injected it into the system of a heifer that had not had cow-pox, and thereby rendered the latter immune from cow-pox, as was demonstrated by control experiments.

From the result of this experiment, the inference is drawn that if the blood serum of a person who has had small-pox should be injected into the body of a person liable to small-pox, the latter would thereby become as immune against the small-pox as was the person from whom the blood serum was extracted. If this inference be well taken, it would seem to justify the broad generalization that we are approaching the time when we may be able to render man immune against all diseases to which he is only once liable. To accomplish this, however, even if it be within the limits of human effort, will require further study into the nature and function of ptomaines and leucomaines, toxines and anti-toxines, further allusion to which is not within the purview of this address.—*Journal of the American Medical Association.*

SCHOOL HYGIENE.*

REPORT OF THE COMMITTEE ON SCHOOL HYGIENE, PRESENTED TO THE SECTION ON STATE MEDICINE AT THE FORTY-FOURTH ANNUAL MEETING OF THE AMERICAN MEDICAL ASSOCIATION, MILWAUKEE, JUNE 7TH, 1893, BY D. F. LINCOLN, M.D., CHAIRMAN.

UPON the formation of the committee it was thought best to divide the work among the members, assigning a separate department to each. It has been found in practice, however, that the ground has not been fairly covered by this plan. Long and careful special papers have been prepared and published by some of the members, while others, though deeply interested in the work, have not found time to treat their assigned subjects in a manner which would justify them in publishing results. It has, therefore, seemed best to the chairman of the committee to take the responsibility of drawing up a brief but comprehensive statement of principles covering all the topics; submitting the whole to each member, and presenting the matter to the Section of State Medicine.

It seems desirable in doing this to avoid statements which are open to reasonable doubt. It is thought that the most useful result can be gained by a simple untechnical presentation of facts, omitting discussions, statistics, and arguments; with the object of securing the attention of school authorities, teachers, builders, and others interested in education.

a.—SITE, DRAINAGE, AND SEWERAGE OF SCHOOL BUILDINGS.

1. *Good Light.*—This point has been seriously neglected in many city sites, for financial reasons. The neglect to secure good light has been demonstrated to be an important cause of near-sight in scholars. The desired object can be attained by reserving a tolerably wide strip of land around the school building at the outset, and by municipal regulations restricting

* From *Journal* of the American Medical Association.

the height of neighboring structures. It is suggested that the height of such buildings around school-houses should not exceed one half the distance between them and the school-house; or, that the line drawn from the foot of the school-house wall to the upper part of the other house should not form an angle with the horizon exceeding 30°. In small towns the space for play-grounds should be much greater—at least a half acre.

2. *Sunlight.*—If possible, the sun should enter every room in the house at some time in the day, but chiefly out of school hours. The play-grounds should be placed, if it can be so arranged, on the sunny side of the house. There should be no trees overshadowing the house, since this causes dampness.

3. *Neighborhood.*—Disturbing influences, as the presence of large bodies of working people, railroads, noisy streets, engine-houses, are injurious for various reasons, partly as furnishing undesirable outside associations. Immorality or filth should not be suggested in the surrounding neighborhood. A main city street is commonly to be avoided. The vicinity of offensive trades, as tanneries, rendering establishments, refineries, and gas works is to be avoided.

4. *Soil.*—A damp soil is of itself a serious objection to a site. The case is worse if the site be low, with poor natural drainage and poor opportunity for artificial relief. If it be necessary to build on a springy piece of ground, a trench must be dug around the foundation to a depth below the cellar floor, and far enough from the building to insure the safety of the walls; in this, drain tile with loose joints is laid, discharging away from the building at some lower point. It is useless to cement the cellar wall or floor for the purpose of excluding water, but cement or asphalt forms a good protection against dampness.

School yards in towns should be so paved (not gravelled), and underdrained if necessary, as to become dry within an hour after a rain. Dry walks should lead to the out-buildings.

5. *Out-Buildings.*—If privies are employed, they should never be within fifty feet of the main building. They should be separate for the sexes, with entirely separate paths of access, and having a board fence between. Dry earth or sifted

ashes should be sprinkled over the contents once a day. The entire contents should be removed once a fortnight. The receptacle must be so constructed that such removal can be effected easily and completely ; or it should itself be removable with its contents. An iron trough on wheels, or a metal pail is suggested.

Urinals must not be made of iron, and they had better not be made of any metal. Impervious material, such as glass or oiled slate, is best. Cement is very objectionable from its porosity. Joints between slabs should be perfectly tight.

6. *Water-Closets.*—When a supply of water is at hand, water-closets are the best arrangement. They may either be single, or may consist of long troughs corresponding to a number of seats. The pan closet is undesirable, since its inner parts are not freely cleansed by the flow of water. Of the simpler forms of closet, all those which do not furnish a quick and free discharge of water, cleansing the bowl thoroughly and removing all the contents within a few seconds, are to be absolutely rejected. A noisy apparatus is exceedingly objectionable for closets which are placed (*e.g.*, for teachers' use) in the vicinity of school-rooms ; the noise may proceed either from the tank or the basin.

One of the simplest forms of apparatus for schools is the long tank of cement or iron placed under the range of seats. The bottom is covered with a few inches of water, and slopes to an outlet so that by raising a plug the whole contents are quickly discharged into the sewer, after which cleansing is easily effected by a hose and broom. The addition of an automatic flushing apparatus acting spontaneously at fixed intervals has been found desirable.

All closets and urinals in a school-house must have special ventilation by forced draught. No mechanical contrivances or disinfectors do away with the necessity of personal inspection and faithful cleansing by hand.

7. *Plumbing.*—The principles of drainage and sewerage, commonly termed the art of plumbing, are the same for school buildings as for other edifices. It may be stated, that pipes and other fixtures ought to be so placed that they can be *seen* by lifting movable boards, without having recourse to a carpenter, or mason, or plumber to disclose their intricacies.

It should further be understood that the whole system is under the control and supervision of some responsible and intelligent person, who possesses sufficient plans and drawings of the system, and pays frequent attention to its condition.

b.—CONSTRUCTION.

1. *Safety.*—The chief danger is found in old buildings and in those not originally intended for their present use. In such we occasionally find conditions which are nearly sure to cause accidents in case of a panic. The staircase is the important point. It must be very strong, wide, and easy; not steep, not sharp-angled, not spiral or with wedge-shaped steps; it should have a platform at the turn. It is safer without a well; if balusters are used they must be high. In large buildings a staircase should be placed at each end. Halls and outer doors must be wide, and all doors open outward. Fire-escapes on the outside are at best an undesirable refuge, and in the ordinary forms may be very dangerous to a crowd of frightened children. Discipline and practice in "fire drill" or quick, orderly march from the school are by far the best safeguards.

2. *The School-Room.*—The size of a class-room should be governed by the number of pupils it is intended for. If we assume that 50 can be attended to by the teacher, and that 200 cubic feet of space is allowed per head, a room 24 × 33 × 12½ will answer well. The oblong shape is desirable. If the dimensions here given are exceeded in length, there will be difficulty on the teacher's part in supervision and on the scholars' part in seeing what the teacher may show or write on the board. A greater depth or distance from the windows than 24 feet will impair the lighting.

3. *Illumination.*—The lighting of a room for school work requires a much larger allowance of window space than is needed for dwellings. The windows must be square-headed, and brought very near the ceiling; there must be no projections (cornices, piazzas, Italian shades) to interfere with the free entrance of light. The total amount of window glass on a liberal allowance may equal one fifth the floor space; if fully exposed to the sky, less will suffice. Roller shades are of most use when the roller is placed at the foot of the window. Light coming wholly from one side (*viz.*, the left hand) if

sufficient in amount is the best for the eyes; if this plan in any case appears likely to give insufficient lighting, owing to local conditions, windows may be added at the back, possibly also at the right (but in the latter case at a very high level). Windows in front of the pupils are very injurious to the sight. The wall should be colored of a neutral tint, or with a faint shade of blue or green if liked. The ceiling should be white. It must have no cross-beams placed transversely to the light. Blackboards must not be placed between windows.

4. *Miscellaneous.*—The size of recitation-rooms must be planned upon the same principle as that of school-rooms—*viz.*, that of allowing 200 cubic feet per scholar.

It is desirable, where possible, to limit the height of a building to two stories above the street, inasmuch as injury not infrequently results from the excessive strain of climbing upstairs.

Accommodations for hanging clothes should be furnished outside of class-rooms, with good provision for ventilation. Enclosed spaces in the halls, open at top and bottom, are suitable.

Cellars or basements must be high, dry, well lighted, and thoroughly wholesome. If there is no cellar, there must be a dry sub-floor space under the whole building.

Dust being a destroyer of pure air and a foe to health, care must be taken to avoid for floors such material as produces dust; if of cement, it must not crumble; if of wood, it must be "filled" so as to be impervious.

c.—VENTILATION AND HEATING.

A very large proportion of schools are so poorly provided with ventilating arrangements that they are practically dependent on open windows. To relieve this unfortunate state of things, the lower sash may be raised two inches (less in stormy weather) and a board placed in front to deflect the air upward. The upper sash (which ought always to be movable) may be lowered an inch. These measures are attended with little risk, and give perceptible, though partial, relief.

Perforations in the sash, window pane, or wall, also give some relief. Such methods may provide sufficient air for five or six persons in a room, but are entirely inadequate for the supply of a whole class.

The attempt to ventilate school-rooms in cold weather by the windows in the Northern United States is either very dangerous to health or very ineffective, or both. The amount which can safely be admitted in this way may be one fifth to one tenth of what is needed. The existence of ventilating flues or openings does not of itself insure good ventilation. Flues may be too small, or crooked, or partly or wholly stopped up ; they may discharge into other rooms or the attic instead of the outer air ; they may be unprovided with means for causing the air to rise in them ; they may be in many ways badly planned. To enumerate the faults which may be committed would require a treatise.

It ought to be understood by every one concerned in ventilation that large collections of persons require very large amounts of air ; that the amount should be calculated, and the size of the flues determined before the house is planned ; that true economy requires us to consider the system of heating and that of ventilation as inter-dependent parts of one and the same problem ; and that both should form a part of the original architectural design.

The amount of fresh air to be brought into the building for each pupil should be 2000 cubic feet per hour for younger children (under ten) and 3000 for high-school pupils. These amounts are calculated from the assumptions that the external " pure" air contains an average of four parts of CO_2 in 10,000 ; and that when the CO_2 has increased under the influence of respiration to the amount of more than six in 10,000, the air may be considered " impure." Dilution to the extent mentioned above will keep the air of the room below the point of " impurity" here assumed. The purity required by this standard is such that persons coming fresh from out of doors will not perceive any distinct closeness in the air of the school-room.

As regards the relative requirements at different ages, it may be assumed as proportionate to the different amounts of CO_2 exhaled by people of different ages. In the case of children of eight years, it is about two thirds as much as in young persons of fifteen.

If a lower standard of supply is taken (say 1000–1500 cubic feet per hour), there will be a perceptible deficiency of purity,

which will have to be made up by an hourly opening of the windows on the occasion of recess.

If the cubic contents of a school-room equal 200 cubic feet per head, the entire air contents of the room will thus be renewed every four to six minutes. It is found by experience that the draught caused by the in-rushing air need not be troublesome in rooms which allow this amount of space per inmate. It is recommended that this be the average allowance of space.

In testing air for CO_2, it is important to take samples from the level of the pupils' heads, avoiding the admixture of the breath. If the condition of the air at that level is satisfactory, the end of ventilation has been gained.

The rapidity with which the air leaves the room may be ascertained by the use of the anemometer. In addition to this test it is desirable to apply the chemical test for comparing the discharged air with that of different parts of the room ; for if the supply of fresh air is badly distributed, it may happen that in some parts of the room the currents are comparatively stagnant, and the air will grow more impure than the average of the room.

The animal impurities of the expired air (exclusive of CO_2) are probably, in part, of a poisonous nature. They, perhaps, include ptomaines as results of putrefactive decomposition. They are of infinitely more importance than the CO_2 which is associated with them ; but they cannot be conveniently made the subjects of quantitative test. Hence, the CO_2 test is employed, as indicating with *probability* how much the air has been affected by respiration.

The mere removal of foul air, whether by stoves, fireplaces, or ventilating flues, accomplishes but one half of the duty of ventilation. The other half consists in supplying a quantity of fresh air equal in bulk to that removed. It often happens that no special provision is made for this supply ; in this case the entering air is drawn from many sources—out of doors, the halls, the closets, the cellars, and indirectly from many undesirable places. Special ducts, therefore, are requisite for leading the pure outer air in large quantities to the school-room.

Such large quantities of air as are required cannot be safely

introduced without previous warming. But the rapidity with which the air is changed is so great that a high temperature is not required ; as a rule, heating can be effectually performed with air not hotter than 100° F. If the ventilation is sluggish, the air needs to be made correspondingly hotter in order to keep the room warm ; but air thus overheated is apt to have an odor which indicates that it has been in some way injured in the process.

The locality from which the air supply is drawn should of course be such as to avoid impurities—dust, smoke, and bad smells.

A system of ventilation which is working well and sufficiently will produce a near equality of temperature in all parts of the room. The difference between the temperature at the floor level and that at five feet from the floor should not exceed 5°.

A system is efficient in proportion as it maintains its activity under widely varying outside temperatures. Ventilation is needed at 40° as much as at 0°, but it is much harder to keep up a sufficient action in the former case. If the system is based on the draught of heated flues, some additional means for increasing the heat of the flues ought to be available for such mild weather.

The relative humidity of air commonly breathed in our winter climate is low, compared with that in Western Europe. It becomes of necessity still lower when warmed. It is not, however, proved that the dryness thus obtained is generally prejudicial to health, either in schools or hospitals, although some individuals appear to require greater moisture. A part, if not the whole, of the unpleasant effect of breathing superheated air is due to the bad ventilation and the excessive temperature.

The thermometer placed at five feet from the floor should mark an average of 65° to 70° in our climate. This is considerably higher than is found desirable in Western Europe.

It is to be presumed that the entering air is warmer than that which leaves the room, since it contributes a fraction of its heat for the warming of the walls and windows. If introduced at the upper part of the room, it will therefore fall toward the floor by degrees as it becomes cooled. Hence a

level near the floor is a natural one for its exit. The proportion of CO_2 at the upper level of the room is not essentially different, on the average, from that in the lower part, and the level of the orifice of extraction is a matter of indifference as regards that point. If it be our object to get rid of superfluous heat, we should discharge the air from the top ; this, however, is not to be considered normal or regular, but only to be applied when heat is excessive, as (for instance) in evening schools with artificial light.

It is possible to apply the above principles to the ventilating of the smallest school-house. A single room can be heated with an upright cylinder stove of ordinary construction, having around it an air space enclosed by a jacket of sheet iron. In the floor beneath the stove an opening is made, connecting with a flue led to the outer air, through which there will be a rapid and abundant inflow of pure warmed air. The supply flue may run in two directions, so as to be exposed to different winds, and each point of opening should be guarded with a valve. For the escape of foul air, openings near the floor are made in the brick chimney-flue, which should stand at the far end of the room. The stove funnel is carried across the room into the chimney, and its heat insures an upward draught. Open grates and ordinary stoves are aids to ventilation, but perform only a small part of the duty required.

" Direct radiation," or the use of steam heaters in the rooms to be warmed, furnishes no supply of fresh air. If ventilation is fully provided for, as above described, direct heating is admissible as *supplemental* supply in exceptional cases ; but as a rule its use is destructive of good ventilation.

Effective work can be done either by furnaces or by steam heaters in the cellar (" indirect" radiation). In both cases it is exceedingly desirable to provide liberally in respect to the size and power of the apparatus.

On the question of *economy* in ventilation, and the *necessary expense* of good ventilation, much may be said. A great amount of warm air is necessarily thrown away in ventilation. It is estimated that a very perfectly ventilated building, filled with students, expends 50 per cent. more coal than the same building empty and closed, the temperature being the same. This difference would be greatly lessened if we could compare

the case of a well-ventilated, occupied building with one badly ventilated and occupied ; the latter wasting, as it does, a considerable amount of heat by open windows and by the overheating which often accompanies bad ventilation. It is certain that the additional annual expense per pupil of the best ventilation need not exceed the price of one or two cheap lunches. The effect of perfect ventilation, where it has been tried, is to increase the pupil's power of work about 50 per cent., which is a direct saving to the town that pays for his schooling, to which must be added the gain in public health (which is not easily to be estimated), since a large percentage of school children are suffering at present a perceptible diminution of vigor from the effects of foul school air.

The employment of automatic regulators for keeping schoolrooms at a given temperature is recommended as both economical and healthful. Modern methods often uselessly overheat the cellar in which the furnaces stand. Waste steam from the boilers ought to be converted to the use of heating radiators. A liberal salary to janitors or engineers may insure a more intelligent control of the fuel.

The available methods for compelling air to move in ventilating flues are practically two : (1) the ascensive force of heated air ; (2) fans driven by steam or electricity for forcing air into the room or drawing it out by "suction." For the former method, it is generally desirable to make available the otherwise wasted heat of smoke-flues, by causing them to run in the foul-air shaft.

d.—PERSONAL HEALTH.

1. A *minimum* age for entering primary schools may properly be stated as five completed years.

2. The programme of daily work for little children should be widely different from that for older ones. A forenoon session may last three hours ; but no exercise should last continuously more than fifteen or twenty minutes. There should be a constant change of activity, passive attention alternating with active work ; recesses of a few minutes coming very frequently, and recesses of fifteen or twenty minutes at least twice in the session. Adherence to one posture should be required for only a very few minutes at once. Singing should

come in more than once during the session. If an afternoon session of two hours be added, the tasks should be lighter than the forenoon tasks. Two hours must intervene between the sessions. The total amount of task-work and recitation required in primary schools may equal half the nominal period of the sessions.

3. Young persons of both sexes at periods of rapid bodily growth, and especially at that of sexual development, not infrequently require special relief or rest from school-work, which in the case of girls may come at periodical intervals.

As the age increases, the power of concentration and continuous work is strengthened. At the age of fourteen, *five* hours of sessions will be equivalent to *four* or *four and a half* hours of work; to which an hour of home study may rightly be added. The usual length of recitations at this age may be about half an hour; long recitations encourage listlessness. For pupils of full growth (eighteen), eight hours of school sessions and home work is an average *maximum*. This does not exclude the possibility of a greater amount of work for limited periods in exceptional cases among advanced pupils in vigorous health. It is presumed in these estimates that the school has two half holidays or one whole holiday weekly.

4. The attention of teachers and parents should be called to the necessity for wholesome and sufficient meals for scholars, especially breakfasts and lunches. The health of many children is supposed to suffer from overstudy, when the chief cause of the mischief is neglect to eat a proper breakfast, or the substitution of pastry and sweets for plain lunch. The establishment of lunch counters for the sale of hot milk, cocoa, and plain food would be very beneficial in the case of many city schools. Lunch is not a superfluity, but a necessity in cases where long sessions and distant residences keep the pupils away from home five or six hours at a time.

5. The systems of calisthenics in common use—free-hand exercises in full class-rooms for five minutes at a time serve a very useful purpose as a partial relaxation, but are quite inadequate considered as a means of bodily development. For the latter purpose, gymnastic training of a more serious kind is very desirable. Its influence is felt in the development of the mental faculties; it adds force and firmness to the moral

nature ; it furnishes an important correction of those depressant influences of city life which have a tendency to lower the vitality of millions of our population at the present time. It is hoped that the systematic teaching of gymnastics to all our public-school children may soon become an indispensable part of the school course, but it must always be remembered that the more violent athletic sports tend to heart strain and other disabilities that shorten life.

6. The habit of constipation is often acquired as a result of deprivation of bodily freedom and confinement to a stooping or sitting posture, together with the mental tension of school work and the sense of constraint. In order to avoid this great evil and its frequent attendant, dyspepsia, it is desirable to give recess, with liberty of play out of doors, as often as is convenient. This is especially applicable to young children. Retention of urine now and then occurs under too strict school discipline, and may work serious injury. The friendly oversight of a teacher at recess is desirable—often indispensable.

e.—EYESIGHT.

The eyes are often affected injuriously by school work carried to excess or conducted amid unwholesome surroundings. There is a strong tendency to the production of near-sightedness, which can, to a great extent, be remedied by the avoidance of known causes. Among the direct causes of near-sight are bad light, bad position at work, too protracted work, bad print ; and to these must be added, as indirect causes, bad ventilation and heating, poor food, and whatever impairs the vigor of health.

Light in school-rooms should never strike the pupil in the face while at work.

Excess of light is less common than deficiency, but is also harmful. No desk can be more than twenty feet from the windows of an ordinary school-room (supposing the top of the windows to reach the height of about twelve feet from the floor) without impairing the light.

A stooping position and the wearing of tight neck clothing while at work are injurious to the eyes.

To prevent scholars from taking bad positions in writing, it is recommended that children be directed to sit upright, facing

the desk squarely, and be taught vertical writing. Also, that desks be slightly inclined, their front edge to overlap the edge of the seat a little, and the height to be such that the fore-arm easily passes over it. Seats ought to support the back and shoulders in reading without favoring a tendency to lounge. The foot must rest firmly on the floor or on a foot-rest. The average graded school requires three sizes of desks and seats to each room.

The habit of holding work too near the eyes strains them and fosters a tendency to near-sight. For the youngest children, this distance should be not less than 25 cm. = 10 inches; for those of eight to ten years, 33 cm. = 14 inches. Badly proportioned desks and seats, especially where they are too far apart, favor this habit.

The eyes should have some rest from tasks every half hour. Fine embroidery, fine detail in map-drawing or penmanship and the use of fine type must be discouraged.

Such defects as far-sight, astigmatism, and affections of the muscles of the eye are rather common in school children; they often cause headache and other forms of illness. The remedy lies in the use of suitable glasses, as prescribed by physicians. Test-types may properly be used by teachers to ascertain what scholars have marked defects of sight.

f.—SANITARY ADMINISTRATION OF SCHOOLS.

The duties comprised under this head may properly be entrusted to one man in small places; in large towns a division of work will be necessary. The officer upon whom the charge is laid—or in all cases, the chief officer—must be a well-educated physician, with a special and practical knowledge of sanitary science. He should be appointed by the school authorities. He is here designated the medical school officer. It is the duty of this officer to satisfy himself (by personal inspection if necessary) that all children admitted to school are protected either by successful vaccination or a previous attack of the disease against small-pox. He should also formulate and have power to enforce, in conjunction with the State or municipal health officers, regulations to prevent the dissemination of infectious diseases through the schools.

All plans for school buildings, premises, and appliances

should be submitted for his approval in sanitary points. Personally or by deputy he should examine all buildings and premises, with reference to the arrangements for ventilation and heating, size and lighting of rooms, furniture, water-closets, urinals, drains, plumbing, water supply, safety from fire, and other points affecting health or safety. He should have the right of entrance at all times and should be armed with ample powers.

The medical school officer should give personal instruction to teachers of a practical kind, embracing: (1) an explanation of the existent sanitary regulations, with such physiological reasons and comments as may seem called for; (2) explanation of the sanitary arrangements existing in the schools, their practical management, and so much of the theory as may seem desirable; (3) explanation of the structure and use of the eye and other parts of the bodily frame, with remarks on food, clothing, recess, study, and kindred topics, so far as it seems to him desirable and useful to enter upon such considerations.

The said officer has medical authority in cases of immediate exigency, but is not authorized or expected to bestow further medical care as a part of his official duty. The extent to which personal medical *inspection* of scholars is made and individual medical *advice* is given must vary much with different classes of the population. It is not susceptible of extended adoption at present in America.

BREAD MADE WITH SOAP.—From a communication read to the Association of Belgian Chemists lately, it seems that Continental bakers are in the habit of mixing soap with their dough to make their bread and pastry nice and light. The quantity of soap used varies greatly. In fancy articles, like waffles and fritters, it is much larger than in bread. The soap is dissolved in a little water; to this is added some oil, and the mixture, after being well whipped, is added to the flour. The crumb of the bread manufactured by this process is said to be lighter and more spongy than that made in the ordinary way.

SANITATION AND MEDICAL SERVICE ON BOARD EMIGRANT SHIPS.

REPORT OF THE COMMITTEE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION ON "SANITARY AND MEDICAL SERVICE ON BOARD EMIGRANT SHIPS." PRESENTED BY MEDICAL DIRECTOR ALBERT L. GIHON, U. S. NAVY, CHAIRMAN, AT THE SESSION OF THE TWENTY-FIRST ANNUAL MEETING OF THE ASSOCIATION, HELD AT THE ART INSTITUTE, CHICAGO, ILL., WEDNESDAY, OCTOBER 11TH, 1893.

YOUR committee beg to report the following concise statement of their views as to the organization of such a sanitary and medical service on board vessels engaged in bringing immigrant passengers to the United States, as the experience and intelligence of this age make a necessity among civilized and enlightened nations.

They are of opinion and advise:

1. As to the location and dimensions of the quarters for emigrant passengers, the number of berths in each, and the provisions for their ventilation and cleansing:

That the preferable location for such quarters is abaft the midship section of the vessels; that single males' quarters shall be distinct from those occupied by women and children, and that if any are forward the midship section, it shall be those for single men.

That there shall never be more than two decks (properly there should be only one) occupied by emigrant passengers' berths, with sixteen feet of superficial space for each adult on the upper berth deck and twenty feet of such space on the lower berth deck, with not more than two tiers of berths on each deck, the bottom of the lower tier being not less than eighteen inches above the deck, with not less than thirty inches between the two tiers and between the upper tier and the ceiling of the compartment, to allow the occupants of the berths to sit upright.

That no solid partitions or bulkheads shall be placed in any steerage compartment to obstruct light and air.

That the framework of the berths shall be of iron, easily removable, that the compartment may be completely emptied and thoroughly cleaned after each passage.

That a steam ventilating apparatus by aspiration shall be introduced into all emigrant vessels ; and

That all compartments occupied by passengers and crew shall be lighted by the incandescent electric light by night and day.

2. As to the location and dimensions of hospitals on board such vessels and the number of sick berths for which provision should be made :

That the hospitals, or "sick bays," on board emigrant passenger vessels shall be at the extreme after part of the upper deck, thoroughly lighted and ventilated, with eighteen feet of superficial space for every fifty passengers, and not less than four sick berths or hospital cots for every hundred passengers.

3. As to the number of medical officers proper for the maximum of emigrant passengers any vessel should be permitted to carry, being the maximum number able to be berthed with regard to health, cleanliness, and comfort :

That there should be one duly qualified medical officer for every two hundred and fifty passengers.

4. As to the professional records which the senior medical officer of every such vessel should be required to keep and his responsibility to the health authorities of the port of arrival for the truthful and professionally accurate statements of such records :

That the senior medical officer of every such vessel shall be required to keep (1) a *list of sick*, recording in a bound book, in the order of their admission, and on a single line, the name, sex, age, birthplace, date of admission to treatment, date of death or discharge from treatment, disease, and such remarks as may be necessary to enable the inspecting medical officer at the port of arrival to have a clear and complete understanding of the case ; and (2) a *medical journal*, in which each medical officer, when there are more than one, shall record the medical history, including symptoms and treatment of every case, to be approved and signed by the senior medical

officer at the close of the day's record ; and such list of sick and medical journal shall be submitted to the health authorities of the port of arrival, and the accuracy of the statements in such records shall be established by oath, and penalties for perjury shall be provided.

5. As to the location and capacity of latrines for emigrant passengers :

That the latrines—shallow troughs with a continuous flow of salt water— shall be on the upper deck under shelter with two water-closet seats for every fifty passengers, with a proportionate number for women and children, in a separate locality near their own quarters inaccessible to men.

6. As to the number of attendants provided for such passengers and their duties as to policing and cleansing emigrants' quarters :

That there shall be not less than one berth-deck attendant for every fifty passengers ; female attendants in the same proportion being exclusively assigned to the quarters for women and children.

That the berth decks shall be thoroughly cleansed every morning by the attendants, never wetted in rainy or damp weather, when they shall be scraped, swept, and freshly sanded ; and in pleasant weather washed with hot water and quickly dried, the passengers being sent on deck during the operation.

That the berth-deck attendants shall be on duty night and day in rotation by regular sea watches, and the attendants on watch required to remove the dejecta of seasick passengers without delay.

That benches and mess tables shall be provided, and the passengers' food be distributed by the berth-deck attendants, who shall take away all unused food and carry the dishes to the pantry.

7. As to additional provisions for the personal health, cleanliness, and comfort of emigrant passengers.

That wash-rooms under cover with basins supplied with running water shall be provided on the upper deck ; those for men to be separate from those intended for women and children.

That fresh water for drinking purposes shall be provided in each compartment; and

That inexpensive mattresses, pillows—these to be serviceable as life preservers—and blankets shall be provided for emigrant passengers, the mattresses to be destroyed after each passage, and the pillows and blankets to be steamed and washed before being again used.

While other suggestions as to sanitary provisions might appropriately be made, your committee feel that those indicated are of such urgent necessity that they should be insisted upon and put into effect without delay.

All which is respectfully submitted,

ALBERT L. GIHON,
Medical Director, U. S. Navy, Chairman.
FREDERICK MONTIZAMBERT, M.D., F.R.C.S., D.C.L.,
Superintendent Quarantine Station, Grosse Isle, Quebec.
WALTER WYMAN,
Supervising Surgeon-General, U. S. M. H. S.
S. R. OLLIPHANT, M.D.
President State Board of Health of Louisiana.
WILLIAM T. JENKINS, M.D.,
Health Officer of the Port of New York.

DOES THE PRESENCE OF LEPROSY IN THE UNITED STATES, CANADA, AND MEXICO CALL FOR THE SUPERVISION OF THEIR SEVERAL FEDERAL GOVERNMENTS?*

By BENJAMIN LEE, A.M., M.D., Ph.D., of Philadelphia, Secretary of the State Board of Health of Pennsylvania.

AT the meeting of the American Public Health Association, which took place in the city of Brooklyn in the year 1889, I had the honor to present a paper, in which attention was called to the constantly increasing opportunities for the introduction of leprosy into the United States from outside, through our seaboard ports, and the consequent expediency

* Read in the Section of Hygiene, Climatology, and Demography of the Pan-American Medical Congress at Washington, September 5th–9th, 1893.

of making that disease the subject of maritime quarantine or exclusion. A resolution was then adopted calling the attention of the United States Government to the subject, and suggesting that definite action be taken to prevent the further introduction of the disease. The recommendation received immediate attention from the national authorities, and a regulation was adopted by the Treasury Department, ordering that any person affected with leprosy discovered attempting to enter the United States at any port of entry should be returned to the country whence he or she came. Under this regulation a number of lepers have thus been denied entrance to the country. So easy is concealment of the disease, however, in its earlier stages, so insidious is its approach, and so numerous are the avenues through which it may gain an entrance from the British possessions on the north, from the West Indies on the southeast, and from Mexico and Central America on the south, quite independently of our sea-coast quarantines, that we may reasonably look for a very considerable augmentation of the number of persons suffering from this infection already within our borders. I therefore venture to solicit the attention of the section for a few moments to the question of the domestic quarantine or segregation of lepers.

In order to obtain data of a somewhat reliable character on which to arrive at a conclusion, circular letters have been addressed to the various State and provincial boards of health and to physicians especially engaged in the study and treatment of skin diseases containing inquiries. The replies to that addressed to official bodies, taken in connection with the published observations of well-known specialists, indicate that within comparatively recent times—since 1858, for instance—between five and six hundred lepers have had official recognition in this country and Canada ; and that at the present time one hundred and seventeen cases of the disease are known to the authorities.

It also appears that there is an entire absence of uniformity in the methods of dealing with these unfortunates, and that in the majority of the States they are entirely ignored. As Mexico had not at the time that I began this investigation taken part in the deliberations of the American Public Health Association, I unfortunately have no original data from that gov-

ernment. This is the more to be regretted, inasmuch as they would undoubtedly prove of great intrinsic interest, and also as the rapidly increasing intercourse between the two nations makes the question one of practical importance. The disease is well known, however, in the western regions of that country. There are usually about thirty under treatment in hospital in the City of Mexico—separate wards being assigned them, but segregation is not insisted on.

Thus much for cases of which official cognizance has been taken, and most of which have been treated and maintained by governments, whether national, State, county, or municipal. There remain to be considered those which have been under the care of private practitioners. Believing that all such cases would have been seen in consultation at least by those who had made diseases of the skin a specialty, and feeling also that the opinions of such men were entitled to especial consideration in regard to the mode of propagation of this affection, and to the necessity, if any, for the adoption of measures for its restriction, I addressed the following series of interrogatories to thirty-four prominent dermatologists, representing all sections of the country, from Canada to California :

DEAR DOCTOR : Believing, from the nature of your specialty, that you must have met with cases of leprosy, and desiring to obtain reliable data as to its occurrence in this country, I make bold to request the favor of a reply to the following interrogatories :

1. How many cases of that disease have you met with in the course of your practice ?

2. How many cases have you at present under treatment ?

3. What have been the ages, sexes, and nationalities of your cases ?

4. Does your experience lead you to think that there are concealed cases in your city ?

5. What, in your opinion, would be the best means of caring for lepers in this country :

(*a*) The establishment of a national leper colony ;

(*b*) The establishment of State or city leper houses, or

(*c*) The assignment of special wards in general hospitals to lepers ?

6. What are, briefly, your views as the mode of propagation of the disease, and the expediency of isolation of those infected with it?

An answer to the above inquiries, which, if you so desire, will be considered confidential, will be sincerely appreciated by

Yours very truly,

BENJAMIN LEE.

Twenty-one replies have been received, the results of which may be summed up as follows:

Number of cases treated, 90; of which 7 are stated to have been in hospital

Number at present under treatment, 3. In some instances the respondents decline to state. This is only what was to have been expected, and can excite no surprise. The ages of the patients have ranged from nine years to seventy. Of 76 cases in which the sex was reported, 67 were males and 9 females. Of 32 cases in which the nationality was given, 10 were natives of the United States, 6 were Chinese, 12 were South American or West Indian, 2 were Swedes, 1 was Irish, and 1 Canadian.

Eight of those reporting consider it probable that there are concealed or unrecognized cases in the large cities in which they themselves reside; of course, the larger the city the greater the opportunity for hiding, and therefore the greater the probability of this course being pursued. The case which recently occurred in my own city, in which a leper in the ulcerous stage, discovered employed as cook in a hotel, had been kept carefully out of sight by the proprietor, is fresh in every one's mind. Nearly all of the cases which the authorities of our large towns have had to take care of have been lurking in secret places, fully aware of the nature of their affliction.

As to the best means of caring for lepers—the three suggestions of the circular having been, as will be recalled, the establishment of a national leper colony, the establishment of State or city leper houses, or the assignment of special wards in general hospitals—14 replies were in favor of the assumption of the care of these unfortunates by the national government in a leper colony or colonies, on the score of humanity to the victim, and of benefit to science, as well as of protection to the public.

The suggestion was made by one that in every large city a ward in a general hospital should be set apart for the observation of suspects before they were removed to the central colony or hospital. Two were of the opinion that the several States or cities should establish leper houses.

Ten were convinced that the treatment of lepers in special wards of a general hospital, or at their own homes even, under proper environment and police surveillance, would not be attended with risk to the public ; but five of these considered that, all things considered, the general government was the proper authority to assume this burden, and that better results would thus be obtained than in any other way.

As to the mode of propagation, no doubt was expressed by any of the 21 as to the communicability of the disease. Nine took strong ground as to its conveyance by inoculation alone, either mediate or immediate, considering its manner of communication almost identical with that of syphilis, while nine others were not inclined so to restrict it, preferring to say that the precise mode of infection was to them unknown.

Only two referred to heredity as a possibility. It is quite safe to say that this latter doctrine is now entirely without scientific adherents among those who have enjoyed a large field of observation.

Now, I am quite willing to admit that there is overlapping in these reports ; that some cases which have been seen in consultation by two physicians have been reported by both ; also that many of the cases reported by physicians are included among those reported by boards of health. From this exception, however, we may exclude almost entirely the cases officially reported from New Brunswick, British Columbia, California, Louisiana, Wisconsin, Minnesota, and Iowa. Making all due allowances for duplication, it must be allowed that, whether we consider the extent of geographical distribution, the differing nationalities, the various ages, or simply the number of victims of this most horrible of all diseases, the general resultant is such as to render the question worthy the attention of the national legislatures of all the countries represented in this congress.

SANITATION AND SANITARY APPLIANCES AT THE COLUMBIAN EXPOSITION.—(A RECORD.)

IN the Anthropological Building are interesting exhibits of statistics of mortality and disease, criminals, population, etc., shown both by figures and charts, and there are also models of hospital wards, prisons, and other institutions. Ventilation, water supply, and other matters of social and public interest are shown by maps, charts, and statistics.

The Engle garbage cremator is in use on the grounds, consuming all the refuse from the Exposition, as described in our issue of March 23d, 1893. Compressed air is used to spray the oil fuel used in the furnaces, instead of steam, as is common in connection with steam-generating plants using oil as a fuel. The air pressure is about one pound. As much as seventy-five tons of garbage per day is reported as having been consumed in the cremators, including the sludge from the sewage purification works, described in our issue of August 3d, 1893.

There is also an exhibit, in the Anthropological Building, of the Davis garbage cremator, in which the gas and flame from the main fire pass over an evaporating pan, under and through the garbage grate, and then over a second fire to the flue. There is also a garbage storage vault, air-tight, with high escape pipe for gases generated. The vault is above ground and has doors readily accessible for the collector. The Sanitary Garbage Pail Company, Detroit, Mich., has a V-shaped pail, hinged at its bottom to the fence or wall of the house yard. Normally it stands with one side flush with the fence or wall and the lid opening inside the yard. The garbage collector has a key which unlocks the fastening, allowing him to pull the pail outward, when he takes out the inner pail, empties it into the cart, and after replacing it pushes the case back into position, when it is automatically locked. A hand cart for garbage, consisting of a galvanized cylindrical vessel on small wheels, is shown by the F. C. Austin Manufacturing Company, of Chicago. Appliances for house ventilating, closet fittings, etc., are also shown. The Pacific Flush Tank Company, of Los Angeles, Cal., shows the Miller auto-

matic siphon. There are three makes of portable disinfecting plants. The Le Blanc apparatus has a vertical boiler and horizontal cylindrical chamber carried on two wheels. Geneste Herscher & Co., of Paris, have a similar apparatus mounted on four wheels, and using direct steam under pressure. The third is a Russian plant of similar character. The United States Government exhibits also include the steam disinfecting plants in use at quarantine stations. A system designed to separate, and to some extent oxidize, solid and liquid house refuse is exhibited by M. P. Nadien, College Road, Harrow, England.

The State Boards of Health of nine States and some of the provincial boards of Canada make exhibits designed to show wholly or in part the nature of their work. Aside from mortality and similar charts, diagrams, and statistics more or less common to these exhibits, some of the more strictly sanitary exhibits were as follows: Maine showed plans of schoolhouses, it having recently made special studies in this direction. Massachusetts had a very complete exhibit showing models of its experimental station and its various features, samples of filtered water with analyses attached, views of sewage purification works in operation in Massachusetts, and a large map showing the normal chlorine of the waters of various parts of the State. Rhode Island has a topographical map of the State, and New York has various maps and views, including illustrations of a sanitary inspection of the Croton watershed, about one hundred photographs and drawings of the new Croton aqueduct and maps of some sewerage systems.

New Jersey shows maps and details of several sewerage systems and a large map of the northern portion of the drainage area of the Passaic River, as prepared by the State Water Supply Commission. Pennsylvania exhibits portable cases containing apparatus for the chemical and biological examinations of domestic water supplies. Louisiana shows models of a system of maritime sanitation. Illinois has some maps and charts showing the intimate connection between the water supply and other unsanitary features of the city of Chicago and zymotic diseases, but it may be added that the city is making great improvements in this connection. Minnesota shows views of a garbage loading dump and a garbage train in transit to a truck farm.

In the Canadian section there is a model of a quarantine station on the St. Lawrence River and plans of the sewage farm at Berlin, Ontario (*Engineering News*, April 6th, 1893), and of the sewage disposal works at the insane hospitals, in London and Mimico, Ontario. There is also in this section of the building a large relief map of the drainage areas of the Boston Water-works. The general arrangement of this department includes athletic training and gymnastic exercises for physical development and for the treatment of diseases, education, prison and reformatory methods, the care and treatment of the poor, the sick and the delinquent, etc., as already noted in a description of the scope of the Bureau of Hygiene. In the gallery is an interesting exhibit illustrating the relative measurements of various parts of the body, and the mean or average measurement representing the average man and woman of to-day. Instruments for noting and recording the delicacy of the senses of touch, sound, sight, memory, etc., also attract considerable attention.

Household Filters.—In the Anthropological Building a number of household filters are displayed, and it is interesting to note the continuous stream of people swallowing glassfuls of the crystal liquid which looks so attractive in the glass bowls and jars. Most of these filters are claimed to be germproof as well as dirtproof. In the Columbia filter (Columbia Automatic Filter Company, Washington, D. C.), the inflowing water passes up through an annular column of sand and percolates through the walls of a porcelain cylinder around which the sand is packed. The Success filter (Shepard & Sumner, New Orleans, La.) uses a hollow block of natural Tripoli stone which is seated on a tube, the bottom of the block being about an inch above the bottom of the filter chamber, thus allowing for settlement of dirt, etc. The stone is claimed to be impervious to germs and microbes as well as impurities of all kinds, so that the material can be washed from time to time and used indefinitely without becoming foul. The filter chamber has a capacity of four gallons, and a block four inches diameter and five inches high will filter eight to twelve gallons of ordinary water, or half that quantity of muddy water, daily. The Germproof Water Stone Filter Company (Akron & Canton Stoneware Agency, Chicago) also uses natural Tripoli

stone, from quarries in Indian Territory, but in the shape of a flat disk between the upper and lower chambers of the filter. The McConnell Filter Company, of Buffalo, N. Y., uses a bell-shaped vessel of silicious clay as a filtering medium, the water passing through from the outside, and the filters are made both for water with and without pressure. The Boston Filter Company uses an unglazed porous porcelain tube as a filtering medium, and J. A. Bowden & Co., Detroit, Mich., make stone filters which may be washed with filtered water, and also filters of a large size for industrial purposes, which might also be used to filter city supplies. In the latter alum is used as a coagulant and crushed quartz as a filtering material. The Cummings filter, made in Philadelphia, employs animal charcoal as a filtering material.

There are also distillation apparatus exhibited. In that of J. A. Bowden & Co., of Detroit, the steam from a lower vessel condenses on the conical bottom of the upper vessel filled with water, and drops from the point of the cone into a funnel in the lower chamber, a pipe leading from the funnel to the outside of the apparatus. In the Hunting automatic distiller (Dr. Nelson Hunting, Albany, N. Y.) the overflow from an upper condensing tank flows to the evaporating chamber, and the steam rises to the upper part of the chamber (to which air is admitted), and being condensed on the bottom of the upper tank the water falls upon a conical shield which sheds it into a gutter around the chamber, from which it is drawn off for use. The Pasteur-Chamberland Filter Company, of Dayton, O., has a "tourist" filtering apparatus fitted with a case 12 × 8 × $2\frac{3}{4}$ inches, which will filter about one gallon per hour. The filtering tube is placed in a jar of the water to be filtered and is sucked in through this tube by means of an air pump. The filtering method adopted by this company (and invented in the laboratory of Mr. L. Pasteur, of Paris, primarily for removing bacteria from liquids during experiments), consists in the use of porous filtering tubes of polished porcelain, through which the water passes under pressure or by gravity. The tubes are of specially prepared clay, baked at a very high temperature, and the water passes from the exterior to the interior, depositing impurities and micro-organisms on the outside. This filter is used in the free drinking-water tanks within the buildings.—*Engineering News, October 19th*, 1893.

NUISANCES.

By A. N. Bell, A.M., M.D.

Whatever is injurious to health, or indecent, or offensive to the senses—harsh, unusual, and untimely noises; sickening, nauseating, and disagreeable stenches and gases; unwholesome trades, slaughter-houses, operations offensive to the senses, and burial of the dead in the midst of populous cities —are nuisances.

Private nuisances are those only which interfere with some private right; public nuisances, those which interfere with the rights of the community. An obstruction to the free use of property, so as to essentially interfere with its use, may be made a nuisance, and the subject of both civil and criminal action. A nuisance is public if it annoy such part of the public as necessarily come in contact with it. A cemetery is not, *per se*, a nuisance, but may become such. And so, too, of horse stables. They are not necessarily nuisances, and if properly constructed and maintained are not likely to become such; but since horse manure in gross comprises a large proportion of nitrogenous matter in its composition, it putrefies with great facility, and not only gives off ammoniacal gases dangerous to health, but constitutes an inviting field roundabout for the propagation of infectious diseases.

If the stable floors are porous or leaky, the floors and the soil under them soon become imbued with the putrescible matter to such a degree as to constitute an inviting field for the propagation of disease germs. And if on impervious floors, or indeed under any circumstances, horse manure is allowed to accumulate, heaped up, raked into areas outside the walls, or stored in vaults, it speedily putrefies, becomes an infective nidus, and evolves mephitic gases dangerous to the neighborhood; and if the manure is handled under these circumstances, pitched from the vaults and areas upon, and into carts from the pavements, and jostled through the streets of a populous city, as it commonly is in Brooklyn, the nuisance is greatly magnified and dangerous to the public health. One

who knowingly maintains a nuisance or any one whose act or omission causes a nuisance is as liable as the one who created it.

There are other nuisances besides those mentioned or indicated in the above, not so specially in conflict with health, some of which are legalized; for example, elevated railroads and trolley surface cars in cities, and liquor saloons, more or less detrimental to health and dangerous to life, but tolerated by the will of the people.

Any one who is annoyed by a private nuisance may himself remove it, or, as it is called, abate it, or he may bring an action for damages; or, if damages would not be adequate, he can apply for an injunction to restrain its continuance or to command its removal.

Of the powers of boards of health to deal with nuisances, a recent decision by the General Term of the Supreme Court of New York, in the case of the Board of Health of the City of Yonkers *vs.* Copcutt (24 N. Y., Supp. 625), is an *apropos* example. The testimony in this action disclosed the existence of an intolerable nuisance in the heart of that city of thirty thousand inhabitants. Environed by dwellings in close proximity to its shore, there had been for many years maintained a mill-pond whose bed is covered to the depth of seven feet with foul sediment, impregnated with offscourings and putrid substances, covered at times with polluted water, and at times bare, giving off noxious, offensive, and sickening odors, which endangered the lives and health of the people. It also showed that the only effective way to abate the nuisance was to destroy the dam and enjoin the rebuilding of any obstruction to the running current of the water. The remedy of the Board of Health was, therefore, said the Court, to abate and remove the nuisance, if one existed, and charge the expense upon the owner of the land—not to order him to do it and impose a penalty for failure to do so. However, under a statute authorizing the Board of Health to establish such regulations as might be necessary to carry into effect the powers of said Board, and to enforce observance of its sanitary code by imposing penalties, the Board could maintain an action for a penalty and injunction against the person who maintained the dam, it being declared by one section of the Board's code that

anything dangerous to public health was a nuisance, and that one who supported it was guilty of violating the section, and a penalty being prescribed by another section for any violation of the code or any ordinance or resolution of the Board. But when the Board, without notice to the person to be affected, passed a resolution requiring the removal of the dam, the penalty for disobedience of the resolution could not be enforced. The fact that others besides the owner contributed to it, and even the city of Yonkers itself, by discharging sewer matter into it, did not relieve the owner of the dam from responsibility for its condition, for it was his act in maintaining the dam that kept the foul substances confined in the pond. It was also objected on the part of the owner that the Board had no power to prohibit the rebuilding of the dam and thereby prevent a nuisance, but that the Board must wait until it was rebuilt and then adjudge it a nuisance. It might as well be said that the Board could not prohibit a load of cholera-infected clothing from coming into the city, but must wait its arrival before taking measures to abate the nuisance. It was simply a means taken to prevent the increase or renewal of what had already been adjudged a nuisance dangerous to life and health. Besides, the penalty could be collected by it for violation of the resolution of the Board prohibiting the rebuilding of the dam.

PUNISHMENT FOR SANITARY DELINQUENCY.—In France drastic measures are imposed on officials who are remiss in attending to their duties. The *Medical Week* for September 29th reports that the mayor of a provincial town was recently suspended from his functions because no sanitary measures had been adopted at the outbreak of an epidemic to prevent the propagation of the disease, which was allowed to spread among the population for more than ten days before an attempt was made by the municipal authorities to comply with the advice of the medical man in charge and with the instructions of the government, by taking the necessary steps to stay the epidemic's progress; also because of the delay in the adoption of the precautionary measures recommended by the physicians sent by the government.

FERMENTATIVE DYSPEPSIA.

ABSTRACT OF A PAPER READ BEFORE THE NEW YORK STATE MEDICAL ASSOCIATION, OCTOBER 12TH, 1893.

By AUSTIN FLINT, M.D., LL.D., Professor of Physiology in the Bellevue Hospital Medical College, New York; Visiting Physician to Bellevue Hospital.

THERE are few diseases that present greater difficulties in the way of treatment and of permanent cure than what may be termed functional dyspepsia. The long-standing "peripatetic" cases, with which physicians are unhappily too familiar, have been prominent among the unsatisfactory and discouraging experiences in general practice. Such cases usually are treated with but little expectation of permanent relief, and the most satisfactory result usually to be expected has been temporary improvement by means of palliatives, and a life rendered more or less miserable by a real or fancied necessity of constant attention to diet and general hygiene. It is in precisely such cases as these—unconnected with gross excesses or indiscretions in diet, and especially with the abuse of alcoholic beverages or narcotics—that modern medicinal therapeutics seems likely to produce such results as will render the treatment of fermentative dyspepsia of a purely functional character almost as certain and satisfactory as that of any acute trivial disorder.

Flatulence is a very common attendant of functional dyspepsia. This condition may be more or less pronounced, and there are great variations in the degree to which it is tolerated by different individuals. The discomfort and distress which accompany flatulence may amount to actual pain, which is sometimes, though rarely, intense; but when pain is habitual, remedies directed to its prompt relief are merely palliative and usually do actual harm in the end. This remark is especially applicable to all forms of opiates, whether administered by the mouth or by subcutaneous injection. Contrary to the popular and, to a certain extent, the professional notion, I

must apply this remark as well to the various pepsins, pancreatins *et id genus omne*, so commonly prescribed. I have fairly full records and histories of a score or more of what may be called peripatetic cases of dyspepsia of several years' standing which have been subjected to nearly every variety of routine treatment, and these constitute but a small proportion of the cases that have come under my observation. I have yet to see, however, a single case in which any of the pepsins, pancreatins, or the physiologically absurd combinations of pepsin and pancreatin logically seemed to have produced any benefit, even of a temporary character. In certain cases in which they have appeared to act favorably as palliatives, careful inquiry has almost invariably shown an attention to diet and hygiene during their administration, to which their apparently favorable effects have been fairly attributable. If this statement is even in a measure correct, it is most important that the fact should be recognized and appreciated, in view of the gratuitous instruction in the physiology of digestion and the pathology and therapeutics of dyspepsia offered so freely to physicians in the advertising pages of medical journals and in circulars by pharmaceutical manufacturers and even meat packers, and indiscreetly endorsed by members of the profession. Of late years my opinions have not permitted me to extend my experience in pepsins, etc.; but the histories of previous treatment in cases that have come under my observation, as well as physiological considerations, have convinced me that agents intended to supply an assumed deficiency of digestive enzymes are absolutely inert. I do not wish, however, to be understood as including in this condemnation the use of foods partially digested, or peptonized, undoubtedly valuable in many cases.

Digestion is one of the most complex of the physiological processes, and even now it is but imperfectly understood. Concerning certain facts, however, there can be no doubt. It is well known to physiologists that a combined as well as a successive action of the digestive fluids is essential to normal digestion. If the food is imperfectly masticated and insalivated, especially the latter, digestion becomes difficult. It is essential not only that the saliva should exert its own chemical and mechanical action, but that it should become gradu-

ally mixed with the secretions of the stomach, and that the gastric juice should as gradually be mixed with the food, the pepsinogen being transformed as it is discharged from the peptic cells into pepsin by the action of the hydrochloric acid produced by its peculiar cells. Assuming, even, that a few grains of what is called pepsin, extracted from a pig's stomach and dried, will have the same action in the human stomach that it has on minced food in a test tube, it is by no means certain that the discomfort and distress which are sometimes observed soon after taking food are due to deficiency of pepsin. As a rule, these symptoms are produced by the undue formation of gases, which artificial pepsin is not known to have any power to control. Normally the gases of the stomach do not exist in large quantity, and probably are derived mainly from the air which is incorporated with the food in mastication, an evidence of which is the presence of a considerable proportion of oxygen, which is not found in other portions of the alimentary tract. When gas is formed in the stomach, it is probably due to the action of micro-organisms, and these organized ferments take no part in digestion.

It is almost inconceivable that artificially extracted digestive enzymes can find their way into the small intestine in such a condition as to exert any action in digestion. The so-called pancreatin has no existence, the enzymes produced by the pancreas being trypsin, amylopsin, and steapsin. Intestinal digestion, also, is an alkaline process ; and it has been abundantly shown by experiment that it cannot go on with sufficient efficiency to support life in the absence of the action of the intestinal juice, the composition of which is unknown, and of the bile, the action of which has never been clearly understood and defined. Life, indeed, cannot be maintained in the absence of either the bile or the intestinal juice alone.

Gases are much more abundant in the small intestine than in the stomach ; and a certain quantity of gas is essential to the proper movements of the alimentary mass under intestinal peristaltic action. The composition of the gas in the small intestine—consisting, as it does, of carbon dioxide, pure hydrogen, and nitrogen in variable proportions—shows that it is in greatest part derived from the food, even if it be admitted that a certain proportion of the carbon dioxide may be

evolved from the blood. When gases are produced in excessive quantity in the small intestine, the action of micro-organisms is probably involved. It is not pretended that the so-called pancreatin has any influence in modifying or restraining this action.

In cases of functional dyspepsia it is by no means invariable that the body is badly nourished, unless the diet is greatly restricted. Many dyspeptics have an appearance of perfect health. While digestion may be slow, labored, and attended with great discomfort and even actual pain, the processes may be efficient and complete, and general nutrition may be perfect. Although such cases are exceptional, they are not uncommon. It is seldom observed, however, that a strict diet called, perhaps, antidyspeptic secures immunity against dyspepsia, although it is desirable and useful to avoid notoriously indigestible articles and those which, in individual cases, have been found to occasion distress.

In my opinion it is seldom the case that undue fermentation in the alimentary mass begins in the intestinal canal. It usually occurs first in the stomach and is continued in the small intestine. In the exceptional cases in which its origin is intestinal there is usually a deficiency of bile, and more or less active diarrhœa is present. In the great majority of cases, however, constipation is fully as common as diarrhœa, and sometimes the bowels are regular. When there is no gastric flatulence, when the digestive discomfort begins two or three hours after the taking of food, and when diarrhœa with flatus is present, it is probable that the fermentation is purely intestinal, and that it continues to an abnormal degree after the residue of food has passed into the large intestine. In all cases it is important to regulate the action of the bowels, either by laxatives or by agents that have the opposite effect. I have been lately in the habit of using Villacabras water as a laxative when constipation is obstinate. By carefully regulating the dose of this water according to the effects observed in individual cases, I have found it act most satisfactorily. Using it for any considerable time, the dose, as well as the frequency of its administration, may be diminished rather than increased, and the dejections are usually easy and painless. I give before breakfast enough to produce two or three

evacuations; and for two or three days after a daily movement follows. It may then be repeated if necessary and given as required. A very important point in the treatment of dyspepsia with constipation is to see that the patient acquires the habit of soliciting, without great effort, a movement of the bowels every morning at a fixed hour, resisting a desire for defecation at other times. Attention to this will sometimes regulate the bowels without the use of laxatives. In cases of undue looseness of the bowels, the remedies administered with the object of restricting fermentation will often suffice. Opium or its derivatives should never be used unless imperatively demanded by intense pain.

My main object in writing this paper is to call attention to the value of certain modern additions to the materia medica that act as antifermentatives. For many years the late Dr. Austin Flint was in the habit of using salicin in doses of about ten grains before each meal, often with remarkable success. I have used this remedy very largely, and have frequently found it of great benefit; but I have lately employed other agents which seem to be much more efficient.

In nearly every case of functional dyspepsia that has come under my observation within the last ten months I have begun the treatment by giving five grains of bismuth subgallate, either before or after each meal. In some cases it seems to act more favorably when given before meals, and in others its action is better if taken after eating. In studying my records and memoranda of cases, I find that the treatment by salicin has often been unsatisfactory. The proportion of unsuccessful cases was about 25 per cent; but in some cases the effects of this remedy given alone have been remarkble. I have full records of one case of severe dyspepsia of ten years' standing that was completely relieved in a week without any return, now for more than a year. The bismuth subgallate, however, is almost a specific in cases of purely functional dyspepsia with flatulence.

I was led to use bismuth subgallate by seeing it recommended as a valuable remedy in the diarrhœa of children, acting as a disinfectant. I first employed it in a case of dyspepsia of eleven years' standing. Its action in this case was so favorable that I began to prescribe it very largely, almost in-

variably with remarkably satisfactory results, and I continue to use it almost daily. I have no records of many of my cases, but I have been careful to note the few instances in which I have been disappointed in its effects, with certain cases in which its favorable action has been truly remarkable. I have already mentioned the two cases in which it seemed to be of no benefit. The following are a few of the cases of remarkably prompt and favorable action : A case of alcoholism of twenty years' standing, with habitual dyspepsia for the last five or six years ; bismuth subgallate gave almost instant relief ; the flatulence and distress disappeared in twenty-four hours, and did not return, except in a very mild degree, when they were usually relieved by a single dose. While under other treatment for alcoholism, this condition was relieved. The patient has taken no alcohol for several weeks and has no craving for it. A case of dyspepsia of four years' standing, with a chronic diarrhœa, was entirely relieved in five days by the use of the bismuth subgallate alone. A case of dyspepsia of more than thirty years' standing was promptly relieved by bismuth subgallate alone. In this case, every few weeks the trouble returns and is relieved by two or three doses. I am indeed no longer surprised at results from the use of this remedy, which first seemed to me remarkable ; and now I confidently expect prompt and favorable action. I have been in the habit of prescribing it in capsules containing five grains each, but lately have had it prepared in the form of tablets. In this latter form it is more convenient and seems to act more favorably.—*From New York Medical Journal.*

WEARINESS.*

By Michael Foster.

When you, Mr. Vice-Chancellor, told me your wish, which is law, that I should be the Rede Lecturer of this year, I felt that, in attempting to fulfil the honorable task laid upon me, I ought to take my theme from the science which I here represent and for the study of which the University has done so

* Being the Rede Lecture delivered before the members of the University of Cambridge, June 14th, 1893.—*From Nineteenth Century for September.*

much. At the same time I felt, also, that I ought to choose not an abstruse and novel topic, the discussion of which could be interesting only to the few, but rather some simple story having a direct bearing on daily life, such as could be understood by many. Reflecting that the power, and hence the usefulness, of the machine which we call the human body is limited by two shortcomings prominent among others—by the inertia, the sluggishness which makes it so hard to set a going and by the readiness with which it wearies, so that its work is often stopped before its task is done—I thought that I might not be wasting your time in saying a few words, as plain and as simple as I can make them, helped by a few plain and simple experiments concerning the physical causes of that weariness which is always making itself felt in human life, even in some cases in the life of the Easter term.

Allow me to begin with a simple yet illustrative case—the weariness which comes from the much repetition of a simple movement, a simple muscular act, as when a man moves a weight with his hand.

We may analyze, physiologically, such a simple act as follows. Certain events occur in what physiologists call "the central nervous system," but which in this lecture I will venture to speak of under the broad phrase of the "brain." These give rise to other events, to changes which travel along certain bundles of fibres called nerves, and so reach certain muscles. Arrived at the muscles, these changes in the nerves, which physiologists call nervous impulses, induce changes in the muscles by virtue of which these shorten, contract, bring their ends together, and so, working upon bony levers, bend the arm or hand and lift the weight.

Obviously weariness may intervene in at least three ways. The muscles may become weary, the nerves may become weary, the brain may become weary; all or any of the three may become weary.

Let us first consider the weariness of the muscle, since our knowledge concerning this is the more ample and exact, and the study of it may serve as a simple lesson on weariness in general.

My Friend Dr. S. will now throw upon the screen the shadow of a small muscle attached to a lever. The muscle is

alive, though the frog from which it was taken is no more, and we can, within limits, make it do all that it could do while it was as yet a part of the living frog. We can by means of an electric current imitate the changes in the nerve, of which I spoke just now as nervous impulses. Dr. S. will now apply the electric current, and, as you see, the muscle contracts, shortens, brings its two ends together, and moves the lever. The current which we used was an exceedingly feeble one—too feeble to be felt by even that most sensitive organ, the tip of the tongue. We will now make a greater demand upon the muscle. Dr. S. will apply a stronger current, and keep on applying it for some time. You see, at first the muscle contracts vigorously, boldly lifts up the weight, which is many, many times heavier than itself; but, observe, as the work goes on it begins to lose its hold on the weight, the weight is sinking. There is no change in the current, the change is in the muscle; it is becoming tired. Now, you see, the weight has so far sunk down that it is hardly lifted at all; and when we take away the current there is very little further sinking of the weight. Let us now apply again the feebler momentary current which a little while ago called forth a vigorous jerk. You see, it has positively no effect at all. The muscle does not so much as stir. The violent effort which the stronger current called forth has so affected the muscle that it no longer responds to the feebler current. The muscle has been wearied.

Here, however, perhaps some one will say that I am taking unnecessary trouble to show what everybody knows. We may argue as follows: The muscle, when it was removed from the body of the frog, possessed a certain store of energy, laid up in it by virtue of the changes always going on in the living body. Just as a wheel, thrown off by accident from some machine in full swing of action, will go rolling along for many yards by virtue of the impetus given to it by the working of the machine of which it formed a part, so the vital changes wrought in the whole body continue spinning in the muscle separated from it. That store of energy was used up in the violent treatment which we have just witnessed; there is now no energy left to make the muscle move.

But the case is in reality not so simple. Could the time at

our disposal permit us to wait and watch this muscle for some little time, say for half an hour, we should find that the weariness had passed away, that the muscle had recovered its power, and that the feeble current was once more able to call forth a movement. Perhaps even already the restorative change has begun. Yes! you see the feeble current already produces some effect, though not its full initial one.

You must allow me to assure you, I cannot now go into the proofs, that the life by virtue of which this separated muscle is still living is of the same kind as that which it had while yet an integral part of the whole living body; the life is slower, feebler, less intense than that which it had within the body; it is a gradually diminishing life; but in all essential features it is identical with it. Were it needed, I might show the same weariness of the muscle within the living body; the only difference would be that the weariness would come on more slowly and disappear more rapidly.

Observations and reasonings, into the details of which I cannot enter now, have led physiologists to the conclusion that a muscle not only in the body, but also for a measurable time out of the body, is continually undergoing change of substance; that the complex groupings of atoms, molecules, and particles by virtue of which it is alive are continually being made and as continually being unmade; the living complex muscle is always being built up out of, and always breaking down again into, simpler substances. Did we possess some optic aid which should overcome the grossness of our vision, so that we might watch the dance of atoms in this double process of making and unmaking in the living body, we should see the commonplace lifeless things which are brought by the blood, and which we call food, caught up into and made part of the molecular whorls of the living muscle, linked together for a while in the intricate figures of the dance of life, giving and taking energy as they dance, and then we should see how, loosing hands, they slipped back into the blood as dead, inert, used-up matter. In every tiny block of muscle there is a part which is really alive, there are parts which are becoming alive, there are parts which have been alive but are now dying or dead; there is an upward rush from the lifeless to the living, a downward rush from the living to the dead.

This is always going on, whether the muscle be quiet and at rest or whether it be active and moving. Whether the muscle be at rest or be moving, some of the capital of living material is always being spent, changed into dead waste, some of the new food is always being raised into living capital. But when the muscle is called upon to do work, when it is put into movement, the expenditure is quickened, there is a run upon the living capital, the greater, the more urgent the call for action. Moreover, under ordinary circumstances, the capital is, during the action, spent so quickly that it cannot be renewed at the same rate ; the movement leaves the muscle with an impoverished capital of potential stuff, and a period of rest is needed in order that the dance of atoms of which I just now spoke may make good the loss of capital and restore the muscle to its former power.

Herein lies, of course, the first factor of weariness ; and you will not have failed to observe in this the dominant influence of time. Weariness comes to the muscle, not because so much capital has been spent, but because it has been spent at too quick a rate, it has been spent more quickly than it can be replaced. The very occurrence of weariness is contingent on this common feature of the life of the muscle, I may say of life in general, that while it is quite easy to quicken the downward steps of expenditure, *facilis descensus*, it is a much harder task to hasten the upward steps of constructive storage. Whether a muscle wearies or not with action, and how soon it wearies, will depend not so much on how much work it is called upon to do as on whether or no the expenditure involved in the work outruns the income. You shall take a weak muscle—that is to say, a muscle with a scanty store of available living stuff—and a strong muscle—that is to say, one with an ample store—and by timely calls on the weak one, and an imperious sudden demand on the strong one, you shall get much work from the former, leaving it still fresh, while the latter is wearied before it has done a little of the work of the first. And there is one muscle in the body whose internal adjustments are such that each movement is tempered to suit the store of energy which it holds at the moment, and which is so sheltered by regulative mechanisms that only in disorder of the body can its expenditure be raised by external

calls beyond its means. Hence it comes about that to this one muscle weariness is unknown. Oftener than once a second its fibres are shortened in a grip which drives the blood all over the body, but it repeats its stroke untired through minutes, hours, days, and years. The heart may be worried by disorder, but is never truly wearied by its own work; and when at last it stops in death, its failure, save in rare cases, comes because some evil born in another part of the body has clogged the wheels of its machinery, not because its innate power is spent.

A too rapid expenditure of living capital (important though it be) is not, however, the only factor of muscular weariness; there are other factors to be considered.

The muscle, even when it is at rest, is, as I said just now, the seat of a double stream of matter; a stream of lifeless things becoming alive, a stream of living things becoming dead. And part of the economy of the muscle consists in the adequate arrangements by which the blood which brings the material about to become alive at the same time carries away the waste which has been alive and is now dead. But each movement of the muscle is, as it were, explosive in character; when the fibres shorten in contraction the downward stream swells to a torrent, and for a while the dead débris is heaped up in the interstices of the living framework. I need not enter now into the details of the chemical nature of this débris, these products of muscular activity. Let it suffice to say that all of them, from the simple carbonic acid which is prominent among them, up to strange chemical bodies with most difficult names, all of them are in greater or less degree poisonous, harmful to the life of the muscle. It is, indeed, a feature of all life that each member of the body, in the very act of living, manufactures poison to itself. The point to which I call your attention is, that even under the most favorable circumstances these products of the muscle's work must tarry for awhile—it may be for a brief period, but at all events for awhile—in the very substance of the muscle, and that so long as they remain there some of them at least are harmful. I have not succeeded in devising an experiment which would show to a large audience that a muscle in moving does produce out of itself new substances, though it might be made

very clear to a few ; but I can, I think, make evident to all of you the harmful action on a muscle of these products of its own activity. You see before you the shadow of a tortoise heart, which, though removed from the body, is fully alive and beating vigorously. A light lever has been attached to it by a thread in such a way that at each beat it pulls the lever up. You see it moves from time to time in a slow and stately rhythm, without the need of any stimulus. It is moving of itself for the same reason that the muscle which you saw just now moved when called upon to do so ; it is living on the supply of food which it some time back received from the blood, and which in various stages of change is stored up in the interstices of its living framework. I will now feed it, will bring into contact with its muscular fibres a very weak solution of some of the products of muscular activity. You see the beats are already becoming feeble, and now they are so feeble as to be with difficulty seen. I have poisoned the heart with the products of its own activity. That the failure is due to the hampering effects of the solution, and not to any intrinsic diminution of the heart's own power, is shown by this, that if I were to wash away or neutralize the noxious solution, the beats would soon begin again.

We are thus led to the conclusion that the failure in power which follows action, and which we call weariness, is due not only to the too rapid expenditure of capital, but to the clogging of the machinery with the very products of the activity. And indeed there are many reasons for thinking that this latter cause of weariness is at least as potent as the former.

From this we may pass to a further conclusion, the importance of which I shall have to insist upon by and by, namely, that whether a muscle in doing work becomes weary or no, or how soon it becomes weary, depends, not on the muscle alone, but on the manner in which the muscle in its work is aided and supported by the rest of the body. One, perhaps the characteristic, feature of the living body is, that while the labor falling on the whole body is divided among the several members which make up the body, these members are bound together by ties so close, and feel each other's doings by touches so delicate, that the work of each is at once both aided and governed by the work of all the others ; by these

ties the body of which they are parts is made one. Such a tie is the blood sweeping throughout the whole body. The escape from the muscle substance of the clogging, stifling products of the muscle's activity is, in the living body, in large measure dependent on the characters of the blood-flow through the muscle and on the nature of the blood. The more ample the blood stream and the purer the blood, the more rapidly are all these hurtful bodies washed away. If the blood stream be sluggish, or if the blood coming to the muscle be already loaded with the same hurtful bodies, the clearance is slow or wholly fails, and weariness comes on apace.

There is yet another aspect in which we may look at the problem which we are studying before we leave the muscle.

As we have seen, the capital of energy within the muscle is, so long as the muscle is alive, continually being replenished. Fresh material laden with energy is continually being brought by the blood, continually passing from the blood into the muscle, and continually being wrought up into the living substance. The store of this material in the blood is in turn as continually being replenished by the food which from time to time is eaten. Our power to move is, at bottom, the power of our food to burn, the power which our food puts forth while being oxidized; and the measure of the latter is at the same time the measure of the former. But the power is a transformed power, and the conditions under which the energy brought as lifeless food takes on that of the living muscle are in the highest degree varied and complex; hence some insignificant hitch in the linked machinery may render useless the most ample supply of food.

Let me, in illustration of this, show you an experiment. On the screen you see the shadow of a frog's heart, which a little while ago was beating vigorously, but now is motionless, and apparently dead. We have brought it to this condition by washing it thoroughly with a very weak solution of common table salt, which is in itself innocuous toward the heart, and simply serves to dissolve and carry away various matters present in the heart's substance. The heart is not dead but simply "washed out." Now one might suppose that we had washed away all the available food stored up in the meshes of the heart's substance, and that the heart had

ceased to beat for want of the proper supply of energy-laden material. We will now continue the washing out, but in doing so will add to the former solution of common salt a little trace of lime, nothing more; and while I am going on speaking you will see that the beats come back again. We had not washed out the energy of the heart's substance, but we had washed out certain salts of lime which were hanging about in an apparently loose kind of way, and yet the presence of which, in some way or other, served as a link in the complex machinery of nutrition. Yes, you see the heart is beginning to beat, and soon will be working quite vigorously. We have brought it back from apparent and indeed imminent death to fairly vigorous life, without giving it one jot or tittle of energy, by simply giving it the merest pinch of lime, by feeding it with spring water instead of rain water. The absence of this trace of lime stops the whole machinery of life; on such a little link does the working of the whole depend. And what is true of lime is true of many other things of the like kind. The brute force of our food, as I said, is the measure of our muscular strength, but the one can become the other only through the aid of many other things which may be wholly empty of energy, and the failure of these no less than the absence of the former entails at first premature weariness, afterward failure and death.

Taking, then, the simple case of muscular work, the onset of weariness is dependent on many things. Looking for the present to the muscles only, we may say that when a man sets himself a muscular task, whether or no he becomes weary, or how soon he becomes weary, will depend primarily on his store of muscular power, on the bulk and condition of his muscles, and on the rate at which he expends that store, but that the onset of weariness also, and perhaps even more closely, depends on the readiness with which the rest of his body comes to the aid of his struggling muscles, sweeping away with adequate rapidity the harmful smoke and ashes of the conflict, and bringing up with adequate rapidity all the many things which make for that far more difficult work, the successful building up of the living active substance.

But even the simplest and rudest muscular task is not car-

ried out by the muscles alone ; the brain and the nerves share in it too ; and the weakness which comes from even muscular work is not a weariness of the muscles alone. It is a common experience that when we are weary almost, it may be, to death, some sudden emotion, some great joy or fear, may spur us to an effort which just before seemed impossible ; conversely, an emotion may appear to take from us in a moment all our muscular strength. When a boat sees hope of making a bump, the muscles which already seem to be doing their very utmost are found able to do still more. And when the bump is made, the muscles of the beaten crew, which just before were taut with activity, are of a sudden limp and powerless. Now the muscles neither know nor feel ; their weariness cannot be affected by any emotion. That weariness which is put aside by hope and what is hurried on by despair must be a weariness not of the muscles but of the nervous system.

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As we have said, we must distinguish in the nervous system between the central mechanism in which nervous impulses are born, and which we have agreed to call, broadly, the brain, and the nerves, the mere bundles of fibres which carry the impulses to the muscles. We have reasons for thinking that the changes in the nerves are, in many ways, of a different order from those in the brain or in the muscles. And, indeed, we may at once eliminate the nerves from our present problem, for we have evidence that they—the nerves, the mere bundles of nerve fibres—are never tired. I can illustrate this by a simple experiment. Dr. S. will throw on the screen the shadows of two muscles with their nerves, each of which is in every respect like its fellow. We have already seen that if we excite, if we stimulate the nerve we throw the muscle into movement, and that if we keep on, weariness ensues, and the muscle ceases to move. That might be due to weariness of the muscle or of the nerve or of both. We have here an arrangement by which we can set the nerve to work, and yet prevent its work from getting access to the muscle ; we can worry the nerve and at the same time shelter the muscle. This we will do with one nerve and muscle, but leave the other in their ordinary condition. We will now worry the two nerves in the same way. You see that this muscle, the one which is unshel-

tered, is thrown into movement ; the other, which is sheltered, does not move. You see now that the unsheltered muscle is becoming wearied, its movement is dying away. If that were due to the nerve being wearied, then this second nerve, which is being equally worried, should show weariness too, and, when we remove the shelter from its muscle, should fail to move the muscle. Dr. S. will remove the shelter ; you see the muscle moves vigorously ; the nerve has not been tired. This is necessarily a rough experiment, but other more delicate tests carried out in the quiet of the laboratory all tend to show that in a nerve, unlike the case of the muscle, the expenditure of energy takes place in such a way that weariness, fatigue, is not felt ; after even hours of labor, the nerve, the bundle of nerve-fibres, is still fresh and fit for work.

We may put the nerves on one side, then, so far as weariness is concerned. Besides the weariness of the muscle we have to do only with the weariness of the brain, the weariness of the will. I will now attempt to show you, in a direct experimental manner, how, even in a very simple movement, much of the weariness, we may even say the greater part at least of the weariness, is begotten not in the muscle but in the brain.

My friend Mr. H., who has kindly allowed himself to be the subject of the experiment, has placed his hand and arm in the apparatus which you see, and which is so arranged that by bending the second finger he can lift a weight. The height to which, by the most strenuous effort, he can lift the weight (about ten pounds) is indicated by the movement of a lever, and can be read off on the attached scale. I will ask him now to go on lifting the weight at regularly repeated intervals. You see that already his force is lessening ; he is becoming wearied. Now you see that he is unable to lift the weight at all ; he is wearied out. He assures me—and he is an honorable man—that he is making every possible effort ; and those of you who are near enough to watch his face will not doubt him ; he is striving with all his might, and yet he cannot stir, or hardly stirs, the weight. His will is powerless or nearly so.

Now let us substitute for his will an artificial call upon the muscle. Dr. S. will apply directly to the muscle, which seems powerless so far as its owner's bidding is concerned, an electric

current of about the strength which we ascertained a little while ago to be sufficient to cause the muscle to move and so to lift the weight. You see the weight is at once lifted. Mr. H. could not make his muscle contract, and yet the muscle is still able to contract. The weariness which annulled his power to move the weight was a weariness not of his muscle, but, in great part at least, of his nervous system.

And the conclusion which we draw from this experiment may be applied to all cases of weariness from muscular work. Undoubtedly, as we saw a little while back, the muscles themselves become weary, but the nervous system is wearied much sooner than are the muscles. The weariness of the whole body from muscular work is in large measure, and indeed chiefly, a weariness of the nervous system.

The mere nerves, however, are, as we have seen, untiring; they cannot be appreciably wearied. The weariness of the nervous system is a weariness, therefore, of the central part of that system—a weariness of the brain.

Shall we say that it is a weariness of the will? That will depend on what we mean by "will." Certainly, not a weariness of the will as a whole. In the experiment which you saw just now a particular set of muscles was employed to move the weight, and in order to throw those muscles into contraction a particular part of the central nervous system was called into play by the will. Suppose that, at the moment when Mr. H. was so wearied that he could not stir the weight I had called upon him to use some other set of muscles, for example, the corresponding muscles of the other hand, what do you think would have happened? He would have been able to use the second set of muscles, perhaps not quite as well, but very nearly as well as if he had not used the first set of muscles at all. The weariness which you saw stopped him was not the lack of any initiating will, not a weariness of the general will, if we may use such a phrase, but a weariness of the particular part of the nervous system which was called into play in order to carry out the particular movement.

And here you must allow me to make the bald statement, without attempting to give detailed proofs, that the changes which go on in the nervous substance of the brain are very much akin to those which go on in the muscular substance of

a muscle. The two agree in the broad feature that the real living substance is continually being made and unmade, and that nervous action (I am speaking of the brain ; in the simpler nerve-fibre events may be different) means, like muscular action, an increased expenditure of substance. Such knowledge, moreover, as we possess goes to show that weariness of the brain, like weariness of the muscle, is brought about on the one hand by the too rapid expenditure of capital, and on the other hand by the harmful influence of the products of activity. Only while the changes in a muscle are, so to speak, massive, those of the brain are slight. On the other hand, the latter are far more varied and subtle, and the nervous substance is by its very nature exquisitely sensitive. It feels far sooner than does the muscle both the loss of capital and the presence of poison. Hence weariness comes to it far sooner than to a muscle.

Moreover, while the machinery involved in the movement of a muscle is relatively simple, that of even a simple nervous action such as the one we are studying is exceedingly complex. The mechanism employed to carry it out is very intricate, built up of many links, the failure of any one of which means failure of the whole machine. And the weariness of which we have just seen an example may be a failure, not of the whole machinery, but merely or chiefly of one of the links.

I must not attempt to discuss this aspect of the subject, but you must allow me to touch on just one point. And let me first show you, if I can, one remarkable feature of the experiment which we have just witnessed. We may not be successful, but we will try. I will ask Mr. H. again to tire himself out. You see he now hardly stirs the weight. I will ask him in spite of his weariness to persist in his efforts. Yes, you see his strength is coming back to him ; though he has never rested, but has gone on persistently making efforts, he is now able to move the weight again—not so vigorously as before, but still to move it. And now that renewal of power is in turn dying away ; but it will come back again, and if we continued we might obtain a rhythmic series of complete weariness alternating again and again with recovery.

I said just now that the nervous machinery brought into play in even so simple an act of bending the finger is very

complex. One part of that machinery we are apt to overlook. When we will to move the finger certain changes are started, as we have said, in some part of the brain, changes which we have called nervous impulses; these, travelling through the nervous system and down the nerves, reach the muscle, and so call forth the movement. But what ensures that these impulses should travel along the right path and reach the muscles which we wish to move and none other? We have evidence that besides the something which is travelling downward to move the muscle something else is travelling upward from the muscle to the brain; the brain is always, so to speak, in touch with the muscle, is in a way aware of its condition. We possess what is called a "muscular sense." Concerning this much might be said, but for present purposes it will be enough if I say that the muscular sense takes part in every muscular work in such a way that any impairment of the sense impairs the movement, and loss of the sense may render the movement impossible though all other parts of the machinery may be intact.

Now, of all the parts of the intricate machinery of the nervous system, those parts which are concerned in the development of sensations seem especially subject to fatigue. They with especial rapidity become wearied by work. We all know this. We soon cease to hear a continued sound, to feel a continued touch, to taste a continued sweet, and the like; it is proverbial that pleasures soon pall. Moreover, our sensations are often wearied without our being distinctly aware of it. Let me illustrate this by a simple modification of a very familiar experiment, which shows how weariness not only lessens work but breeds error.

Dr. S. will throw on the screen a colored disk. You will, I think, admit that the color is purple. I may venture to call it a pure purple. Dr. S. will now replace the purple disk by a red one. I will ask you to stare at this for some time, fixing your gaze intently on it, and avoiding as much as possible both all wandering of the eyes and winking. Dr. S. will again make a change. And now what is it that you see? A bluish purple, almost a blue, changing while I am talking to a finer purple. Yet you have been looking at the same purple disk that you saw before; only when you saw it immediately after

the red, your eyes, or rather certain parts of your brain, were wearied for red, and for awhile you could not see the red in the purple, or not see it so distinctly ; you saw only or chiefly the blue, which with the red makes up what we call purple. Let me repeat the experiment in another form. Let us weary our eyes for blue by staring at this bright blue disk ; now you see the purple, exactly the same purple as before, looks quite red, almost a pale crimson, before it gradually shows itself in its true color. Weariness is the badge of all our senses, and is the cause of no little error. Many a wearied man has, so to speak, sworn a thing to be red or to be blue when it was neither red nor blue but purple.

Moreover, it is characteristic of the weariness of sensation that it is apt to assume a rhythmic nature. If you stare at a bright but checkered object, such as a window with its panes and sashes, and then shut your eyes, the panes, through weariness, soon change from brightness to darkness, and the dark sashes, which did not cause weariness, appear bright. But by and by there is a reversal, and the panes are once more bright and the sashes dark ; and this image, as the whole sensation gradually fades away, may be once more, and indeed more than once, replaced by dark panes and bright sashes. And in like manner with colors. So, indeed, with sensations other than those of sight. There seems in the nervous machinery through which sensations are generated, a tendency to rhythm, a tendency to swing backward and forward.

This suggests that the rhythmic weariness seen in muscular effort is weariness bred of the sentient factors rather than of the other factors, and there are other facts which I cannot enter into now which seem to give support to this view.

I said a little while back that the weariness which put a stop to the will being able to bend the finger was a weariness of a particular nervous mechanism and not of the whole will. But of course that particular mechanism may be affected by general conditions influencing the whole brain, and indeed by those bearing on the body at large. The simple apparatus which we have used may be, and indeed has been, successfully employed in the analysis of such general influences. If, taking always the same weight, we count the number of times

the weight is lifted and measure the height to which it is raised each time in succession before the movement is stopped by weariness, we can ascertain how much work has been done before the nervous machine is so stopped. Proceeding in this way, some interesting results as to what hastens or retards fatigue have been obtained. First and foremost comes of course the rapidity of repetition; the weight which, lifted every half or quarter second, speedily brings the impotence of weariness, may be lifted every two or three seconds for a very long time withwout any signs of weariness. It is the pace which kills. Practice and habit, it is needless to say, are of prime influence. I must not go into further details, but I may say that the depressing effects of a damp, muggy day, or the exhilarating effects of a bright, clear one, may in this way be measured in foot-pounds of power lost or gained, as may also the lowering influence of a cigar, and (I say this with fear and trembling, knowing the reproachful letters which it will bring upon me) the heightening effect of a glass of beer.

One point, perhaps, I may for a moment dwell upon, and that is the influence of that part of the brain which is more immediately concerned with what we speak of as mental work, with that part of the brain which carries out muscular movement. An Italian professor determined, by means of the apparatus which we have been using to-day, the amount of work which he could on a certain morning do before he was stopped by weariness. He then set himself to two hours' hard mental work, and the form of work he chose was that of examining candidates for their degree. I believe there exists a theory among the junior members of the university that, while being examined is very hard work, examining is a light and airy task. I would ask them to re-examine that theory by the light of the following fact. The professor, so soon as the two hours' examination was over, went back to his apparatus, and found that his power of bending his finger was enormously cut down. I understand that a candidate was used as a sort of control experiment. It was found that he could work the apparatus as well after as before the examination; it is added that he had not "satisfied the examiners."

This illustrates, what we know very well from other sources, the oneness of the nervous system. It is a candle which cannot profitably be burned at two ends at once.

Oneness, however, is a characteristic not of the nervous system only but of the whole body; the several members of which it is composed are bound together into one body by innumerable and close ties. Any act of one member tells on all its fellows. The effect may be slight, and difficult to appreciate, but it exists. The weariness which comes from the monotonous repetition of a simple muscular act like that carried out in the apparatus which we have used may seem to affect only the particular machinery employed, the particular muscle and the particular part of the brain; so that the will, impotent to carry out that particular movement, easily carries out another. Yet the whole body does in a measure feel the effect, does in a measure share the weariness. And when the work done involves the activity, simultaneous or successive, of many muscles, of many parts of the nervous system, the several effects by accumulation become prominent, and simple weariness passes into what we call "distress." Here we find that the result depends not so much on the direct effects of the work on the parts which are actively employed, not so much on the changes wrought in the muscles or in the nervous machinery at work, as on the success with which other members of the body come to the aid of those actually engaged in labor.

Let us take the comparatively simple case of a lad "out of condition" running a race.

Before he has run very far he is panting, and his heart beats quickly. He loses his wind. It is this which troubles him and stops him far more than any lessening power to move his limbs. How does this "loss of wind" come about? Now, it is quite true that when the muscle moves it breathes more vigorously than when at rest, it makes a greater demand on the blood for oxygen, it sends back to the blood more carbonic acid. When many muscles are moving, the blood makes a greater call upon the air in the lungs for oxygen, and pours into that air much more carbonic acid; and it might be thought that the panting breath was directly caused by this changing quality of the blood. But, as we have seen, whenever a muscle moves, other things besides carbonic acid are swept from the muscle into the blood—things which, like the carbonic acid, are a poison to the muscle when left in the

muscle, and become a poison to the body when they pass into the blood. Now careful observations lead to the conclusion that the panting which follows upon undue exertion comes about through these other things. It is the excess of these, and not so much the lack of oxygen or load of carbonic acid, which stirs up the nervous machinery working the respiratory pump.

And let me here insist on the word "undue," for this is the key of the situation. As the breath of man is poison to his fellow-man, so the outcome of the life of each part of the body, each tissue, be it muscle, brain, or what not, is a poison to that part and its fellows, and may be a poison to yet other parts. Of each member, while it may be said that the blood is the life thereof, it may with equal truth be said, the blood is the death thereof: the blood is the channel for food, but it is also a pathway for poison. And what we may speak of as the economy of the body consists in this, that the several members of which the whole body is made up, each performing its own task, are so related to each other that the work of the one is arranged to meet, and depends upon, the work of the other. Moreover, in many cases the relation is such that the poison which one member pours into the blood serves as food for another. The internal life of the body, no less than the external life, is a struggle for existence—a struggle between the several members—a struggle the arena of which is the blood. I cannot now go into details, and indeed our knowledge of the matter is only just opening up; but we have evidence, I think I may venture to say, that these substances which the muscle when it works is always bringing forth—which, heaped up in the muscle itself, give rise first to weariness, then to failure and death, which, passing into the blood, may trouble other muscles than those in which they were produced, may act as poison to allied members, such as the brain, worrying them to irregular action or deadening and stupefying them—I say we have evidence that these substances serve as choice morsels and a source of delight to certain other members which live upon them, converting them into inert matters, or casting them out of the body. We may take as the type of these members that great organ the liver, though many other organs, notably the skin, play a like part. We

have distinct evidence that these poisons which the muscles when in active work are continually pouring into the blood, brought by the circling current within the clutches of the tiny cells of which that great organ is built up, are caught up out of the blood and transformed into harmless matters. And it would seem that the onset of distress is in great measure, if not chiefly, determined by the failure of these organs to keep the blood adequately pure.

Something depends on the vigor of the muscles themselves. Something depends on the mechanical breathing-power of the individual. A great deal depends on the readiness with which the heart responds to the greater strain upon it. For there is a long physiological story, into which I cannot enter now, concerning the ties which bind together heart, muscle, and lungs in such a way that what we call "loss of wind" is much more the stumbling of the heart in its strivings to meet the altered blood flow than mere mechanical insufficiency of the respiratory pump. But beyond and above all these, more important probably in long-continued labor than any or all of them, is the readiness with which these internal scavengers free the blood from the poison which the muscles are pouring into it. Undue exertion is that in which the muscles work too fast for the rest of the body.

Sometimes these organs are slow in settling down to their work; they do not keep pace with the muscles and an initial distress comes because they are not as yet ready; but by and by they awaken to their task, they set vigorously to work, and the runner gets his "second wind." They too, however, are subject to fatigue, and in a prolonged struggle after awhile fail where at first they were effective. As they slacken their efforts, the poisons are more and more heaped up, poisoning the muscles, poisoning the brain, poisoning the heart, poisoning at last the blood itself; starting, in the intricate machinery of the body, new poisons in addition to themselves. The hunted hare run to death dies, not because he is choked for want of breath, not because his heart stands still, its store of energy having given out, but because a poisoned blood poisons his brain, poisons his whole body. So also the schoolboy, urged by pride to go on running beyond the earlier symptoms of distress, the mere loss of wind, struggles on until the heaped-up poison deadens his brain, and he falls dazed and

giddy, as in a fit, rising again, it may be, and stumbling on unconscious, or half conscious only, by mere mechanical inertia of his nervous system, only to fall once more, poisoned by poisons of his own making.

And what is true of distress is true also of that simple weariness which is more properly my theme. We have seen that even in muscular work the weariness is chiefly one of the brain ; and we are all familiar with a weariness of the brain in causing which the muscles have little or no share. All our knowledge, as I have said, goes to show that the work of the brain, like the work of the muscles, is accompanied by chemical change ; that the chemical changes, though differing in details, are of the same order in the brain as in the muscle ; and that the smallness of the changes in the brain as compared with those of the muscle is counterbalanced or more than counterbalanced by the exceeding sensitiveness of the nervous substance. A loss of living capital, or the presence of the products of work which would have no appreciable effect on a muscle, may wholly annul the work of a piece of nervous machinery. If an adequate stream of pure blood, of blood made pure by the efficient co-operation of organs of low degree, be necessary for the life of the muscle, in order that the working capital may be rapidly renewed and the harmful products rapidly washed away, equally true, perhaps even more true, is this of the brain. Moreover, the struggle for existence has brought to the front a brain ever ready to outrun its more humble helpmates ; and even in the best-regulated economy, the period of most effective work, between the moment when all the complex machinery has been got into working order and the moment when weariness begins to tell, is bounded by all too narrow limits. If there be any truth in what I have laid before you, the sound way to extend those limits is not so much by rendering the brain more agile as by encouraging the humbler helpmates so that their more efficient co-operation may defer the onset of weariness.

So far I have dwelt only, and that in the briefest and most imperfect way, on the objective causes of weariness. There is open, however, the still wider field, still more difficult to explore, of the nature and origin of the subjective sensations of weariness. That field I must not now touch.

Among the pleasures which soon fade through weariness, high upon the list stands the pleasure of speaking. Higher still, perhaps, stands the pleasure of hearing another speaker. May I apply to weariness itself the words of the sad Antonio, "It wearies me, you say it wearies you"?

THE ADVANTAGES OF COOKING BY GAS are enumerated by the *Scientific American* as follows:

It is always available at a fixed price; avoiding the necessity for the troublesome and tedious distribution of wood and coal, and saving the rent of a cellar and loss of money from market fluctuations.

Storage of fuel in the immediate neighborhood of the kitchen fire being unnecessary, the use of gas diminishes the risk of fire in a house.

The full heating power is developed from the moment of lighting a gas fire; thereby saving the time and labor spent on fire lighting, which in the case of liquid fuel is accompanied by danger, and accomplishing the work in the shortest possible time.

Increase or decrease of gas consumption according to the requirements of the moment; taking the place of the inevitable stirring of the fire, or removal of vessels from it.

The consumption can be controlled by the meter, so as not to exceed a certain limit ascertained to suffice for requirements.

It can be used with advantage in small as well as large apparatus; the consumption being exactly proportioned to the work to be done.

Scorching of food during cooking is completely provided against, since each burner can be turned down at any time, and the heat regulated to a nicety.

The radiant heat from a gas fire can be taken advantage of in winter for warming the kitchen, but in summer nearly wholly suppressed.

The retention of the full flavor of food is promoted by gas cooking, through the complete control of the application of heat.

No smoke is evolved from a gas fire, and damage to property, cost of cleaning, and all the inconveniences associated with the smoke nuisance are avoided.

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of October a mortality of 84, of which 55 were colored, and 30 were under five years of age. The annual death-rate per 1000 was 32.40.

Zymotic diseases caused 14 deaths, and consumption, 14.

ARKANSAS.—D. W. Holman, Secretary, Little Rock.

CALIFORNIA.—J. R. Laine, M.D., Secretary, Sacramento.

Reports from 83 cities, towns, villages, and sanitary districts, aggregating a population of 784,457, show a total mortality of 987 from all causes during the month of October. This corresponds to a death-rate of 1.25 per 1000 per month, or 15.00 per 1000 per annum.

There were 142 deaths due to consumption, 86 to pneumonia, 28 to bronchitis, 8 to congestion of the lungs, 10 to diarrhœa and dysentery, 23 to cholera infantum, 67 to other diseases of the stomach and bowels, 18 to diphtheria and croup, 1 to scarlatina, 2 to whooping-cough, 31 to typhoid-fever, 11 to malarial fevers, 5 to cerebro-spinal-fever, 31 to cancer, 1 to erysipelas, 75 to heart diseases, 11 to alcoholism, and 437 to all other causes.

The Health Officer of Los Angeles desires to correct his report of five deaths from typhus-fever in that city during September. The deaths should have been reported as due to typhoid-fever.

San Francisco, 330,000: Total mortality, 488. Consumption, 69.

Los Angeles, 65,000: Total mortality, 82. Consumption, 12.

Sacramento, 30,000: Total mortality, 40. Consumption, 7.

CONNECTICUT.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for October has been received from 165 towns in the State, in a population of 794,452.

There were 1068 deaths reported during the month. This was 7 more than in September, and 48 less than in October, 1892, and 28 more than the average number of deaths in October for the five years preceding the present.

The death-rate was 16.2 for the large towns; for the small towns 11.5, and 16.1 for the whole State.

The deaths from zymotic diseases were 225, and from consumption, 92.

New Haven, 90,000: Total mortality, 140. Annual death-rate per 1000, 18.4.

Bridgeport, 58,243: Total mortality, 82. Annual death-rate per 1000, 16.6.

Hartford, 56,000: Total mortality, 81. Annual death-rate, 17.3 per 1000.

Waterbury, 38,500: Total mortality, 59. Annual death-rate, 18.3 per 1000.

Meriden, 26,510: Total mortality, 31. Annual death-rate per 1000, 14.0.

Norwich, 24,200: Total mortality, 38. Annual death-rate per 1000, 18.8.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the four weeks ending November 25th, a mortality of 367, of which number 154 were of colored people, and 103 were under five years of age. The annual death-rate was 16.7 per 1000. There were 74 deaths from zymotic diseases, and 38 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of September, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 496; number of marriages reported,

299 ; number of deaths reported, 261 ; birth-rate per 1000 per annum, 15.21 ; death-rate per 1000 per annum, 8.01 ; average age of decedents, 25.77 ; number of deaths under five years of age, 53.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000 : A. R. Raynolds, M.D., Commissioner, reports 1946 deaths during October, representing an annual death-rate of 14.59 per 1000.

The mortality under the age of five years was 771. The deaths from zymotic diseases numbered 444, and from consumption, 147.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

From the *Monthly Bulletin* of the State Board of Health we quote the following reports for October :

Burlington, 30,000 : Total mortality, 28. Annual death-rate per 1000, 11.2.

Council Bluffs, 35,000 : Total mortality, 26. Annual death-rate per 1000, 8.9.

Davenport, 34,500 : Total mortality, 40. Annual death-rate per 1000, 13.9.

Des Moines, 78,846 : Total mortality, 59. Annual death-rate per 1000, 8.9.

Dubuque, 40,000 : Total mortality, 39. Annual death-rate per 1000, 11.7.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—L. F. Salomon, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for four weeks ending November 18th, 589 deaths, of which number 201 were among the colored people, and 182 of children under five years of age. There

were 91 deaths due to zymotic diseases, and 69 to consumption. The annual death-rate was 30.24 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427: James F. McShane, M.D., Commissioner, reports for October that the total deaths were 587, a decrease of 165, compared with the corresponding month of October, 1892. Of these 455 were whites and 132 colored; a death-rate of 14.21 per 1000 for the former and 22.30 per 1000 for the latter. The death-rate per 1000 for the whole population was 15.48. Sixteen died from infectious diseases, 62 from consumption, 39 from pneumonia, 19 from bronchitis, 8 from cholera-infantum, 7 from diarrhœa, 3 from dysentery, 3 from enterocolitis, 10 from gastritis, 7 from enteritis, and 27 from typhoid-fever. Two hundred and twenty-four deaths were in children under five years of age.

During the month 67 cases of infectious diseases were reported, an increase of 9 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.

State Board of Health Report for the year ending September 30th, 1892.

Though much of the material of this report has fallen under review *au courant* during the period which it covers, it is well to recall attention to its leading topics.

Of infectious diseases it is interesting to note the summary of deaths from small-pox by decades: 1863–72, 2375; 1873–82, 922; 1883–92, 51.

From typhoid-fever the decrease in mortality throughout the State has also been very marked, and has kept pace with the introduction of pure domestic water supplies in the cities and towns.

Diphtheria prevailed in many cities and towns in 1892, with about the same degree as in the preceding year, and scarlet-fever with increased prevalence.

In anticipation of cholera, a house-to-house inspection was made, and an unusual number of nuisances were abated.

The registrations were, for the year 1891: Births, 63,004; marriages, 21,765; deaths, 45,185, and still-births, 2222. The

ratios to the living population, estimated at 2,303,536, were, per 1000 of population : Birth-rate, 27.35 ; marriage-rate, 9.41 ; death-rate, 19.62. Excess of birth-rate over death-rate, 7.73.

The mortality from prominent infectious diseases was respectively, from typhoid-fever, 821 ; whooping-cough, 219 ; croup, 311 ; diphtheria, 907 ; measles, 246 ; dysentery, 234 ; cholera infantum, 2771 ; small-pox, 1. The mortality from phthisis was 5484, 307 less than for the previous year. The ratio of deaths from this cause was 23.8 per 10,000 of the living population, and 12.1 per cent of the total mortality.

Water supply and sewerage continue to be the subject of investigation and report by well-chosen chemists and engineers. Professor Drown contributes two papers upon the "Interpretation of Water Analysis" and "The Amount of Dissolved Oxygen in the Water of Ponds and Reservoirs at Different Depths in Water under the Ice;" Mr. Gary N. Calkins furnishes "A study of Odors Observed in the Drinking Waters of Massachusetts," and a paper on "The Seasonal Distribution of the Microscopic Organisms in Surface Waters." Mr. Allen Hagen, chemist in charge at the Lawrence Experiment Station, contributes a continuation of his experimental work on the character of sewage ; fats in sewage ; fat as a clogging material ; experiments with sand clogged by sewage ; influence of the amount of sludge in sewage upon the rapidity of clogging ; scraping sewage filters ; systematic scraping ; stratification and the effect of horizontal layers ; filtration of sewage containing dye-stuffs ; construction of sewage carriers ; purification of sewage in winter ; on the area of filters to be provided ; removal of clogged sand ; work of filters for 1892 ; filling of experimental sewage filters ; measurements of sewage applied to filters ; operation of experimental sewage filters during 1892. These papers are followed by a description of the sewage fields now in operation at several different places in Massachusetts.

Artificial ice is reported upon by Professor T. M. Drown, from which the Board deduces the following conclusions :

1. Artificial processes of freezing concentrate the impurities of the water in the inner core or the portion last frozen.

2. The impurities are reduced to their lowest terms by the use of distilled water (condensed steam) for the manufacture of ice.

3. The number of bacteria in artificial ice is insignificant under the prevailing methods of manufacture.

4. The amount of zinc found in the samples of melted artificial ice under observation is insufficient to injure the health of persons using such ice.

Food and drug inspection continues to be prosecuted with constantly decreasing ratio of adulterated articles, while the number of samples collected and examined during the year was greater than for any previous year. The number of prosecutions against offenders during the year was 135, of whom 123 were convicted, and the amount of fines secured was $3661.70.

Boston, 487,397 : S. H. Durgin, M.D., Chairman.

There were 967 deaths reported in October, of which number 368 were under five years of age. The annual death-rate per 1000 was 23.80. There were 207 deaths from zymotic diseases, and 115 from consumption.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of November, 1893, compared with the preceding month, the prevailing direction of the wind was southwest (instead of southeast), the velocity was about the same, the temperature was 16.02° lower, the rainfall at Lansing was 1.59 inches less, the absolute humidity was much less, the relative humidity was slightly more, the day ozone was less, the night ozone was more, and the height of ground above the water in the well at Lansing was three inches more.

For the month of November, 1893, compared with the preceding month, influenza, pneumonia, whooping-cough, diphtheria, pleuritis, and tonsilitis increased, and cholera infantum, cholera morbus, dysentery, diarrhœa, and inflammation of bowels decreased in area of prevalence.

For the month of November, 1893, compared with the average for corresponding months in the seven years 1886–92, the prevailing direction of the wind was the same (southwest), the velocity was about the same, the temperature was 1.38° lower, the rainfall at Lansing was .21 of an inch more, the absolute and the relative humidity were slightly less, the day and the night ozone were much more, and the height of ground above the water in the well at Lansing was one inch less.

Compared with the average for the month of November in the seven years 1886–92, typhoid-fever and influenza were more prevalent, and erysipelas, diphtheria, pleuritis, intermittent-fever, inflammation of kidney, typho-malarial fever, and remittent fever were less prevalent in November, 1893.

Including reports by regular observers and others, scarlet-fever was reported present in Michigan in the month of November, 1893, at ninety-five places; typhoid-fever, at eighty-eight places; diphtheria, at seventy-four places, and measles, at twelve places; consumption was reported present by 38 per cent of the observers making weekly card reports.

Reports from all sources show typhoid-fever reported at twenty-one places less, scarlet-fever at seventeen places more, diphtheria at eight places more, and measles at five places more in the month of November, 1893, than in the preceding month.

Detroit, 230,000: Duncan McLeod, M.D., Commissioner, reports for October 320 deaths, of which 118 were under five years of age.

The annual death-rate per 1000 of population was 16.38.

The deaths from zymotic diseases numbered 56, and from consumption, 14.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing.

The mortality record for September, 1016 deaths, is larger than the average for the same month for last six years (953), and greater than the record of this month in any of these years except 1888 (1340). Looking for the cause of this increase of mortality it is observed that the diarrhœal diseases of children mortality is much larger than the average of six years (280–185), and greater than the same month in any previous year. The same is true of diphtheria (44, average six years, 33) and greater than for the same month in any previous year. Enteric-fever is slightly greater than the average (62 to 59). Pneumonia continues its remarkable decrease, being less than the average for six years (16–27). The same is true of bronchitis (7–12), and less than the same month of any previous year. The deaths from all other causes are considerably less than the average (494–514).

St. Paul, 155,000: H. F. Hoyt, M.D., Commissioner, re-

ports for the month of November a total mortality of 106, of which 34 were under five years of age. The death-rate per 1000 was 8.20. The number of deaths from zymotic diseases was 11 ; from consumption, 5.

Minneapolis, 223,700 : E. S. Kelley, M.D., Commissioner.

During the month of October, 1893, there were 166 deaths, representing an annual death-rate of 9.66 per 1000. Zymotic diseases caused 36 deaths, and consumption, 17. There were 53 deaths under five years of age.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—Ezra M. Hunt, M.D., Secretary, Trenton.

Paterson, 92,793 : J. L. Leal, M.D., Health Officer, reports for October 138 deaths, 62 of which were under five years of age. The annual death-rate per 1000 was 18.06. There were 44 deaths from zymotic diseases, and 13 from consumption.

NEW YORK.—Lewis Balch, M.D., Secretary, Albany, reports in the *Monthly Bulletin* as follows :

The reported mortality for October has decreased from a daily average of 311 to one of 290 ; in the corresponding month of last year about 100 more deaths occurred. The death rate for cities and large villages was 18.50 per 1000 population, and of the rural parts of the State about 15.50, that of the entire State being about 18.00. The mortality in rural towns is much less than that of last month and less than it was a year ago. The decrease applies equally to all parts of the State. From the principal zymotic diseases, except from diarrhœal diseases, which caused 861 fewer deaths than in September, there has been an increase in mortality. The autumn increase in typhoid-fever, which was low last month, is greater than usual, 50 more deaths occurring than last October ; the increase has been in the maritime and western

districts. There were 185 more deaths from diphtheria than in September, and the increased prevalence over last year continues, being confined to the southern and central districts; its prevalence is noted in Haverstraw, Tivoli, Sandy Hill, Moreau, and Illion. There is a slight increase in scarlet-fever, but it is less prevalent than last year. Measles and whooping-cough are decreasingly prevalent and cause but few deaths. Small-pox is diminishing in New York and vicinity; a case of varioloid developed in Geneva early in November, the origin of which has not been satisfactorily determined. The temperature for the month was a little above the average of 52°; killing frosts occurred about the 17th. The rainfall was generally deficient, except as reported from the New York Station.

New York, 1,860,803: Total deaths, 3069—1226 under five years. Death-rate, 19.40. Zymotic diseases per 1000 deaths from all causes, 187.00. Deaths from consumption, 386.

Brooklyn, 978,394: Total deaths, 1541—650 under five years. Death-rate, 18.50. Zymotic diseases per 1000 deaths from all causes, 184.42. Deaths from consumption, 184.

Syracuse, 91,944: Total deaths, 153—40 under five years. Death-rate, 19.96. Zymotic diseases per 1000 deaths from all causes, 241.83. From consumption, 29.

Albany, 98,000: Total deaths, 165—39 under five years. Death-rate, 19.13. Zymotic diseases per 1000 deaths from all causes, 145.45. From consumption, 17.

Buffalo, 300,000: Total deaths, 480—188 under five years. Death-rate, 14.50. Zymotic diseases per 1000 deaths from all causes, 220.83. From consumption, 48.

Rochester, 150,000: Total deaths, 181—85 under five years. Death-rate, 14.50. Zymotic diseases per 1000 deaths from all causes, 268.40. From consumption, 25.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

Dr. J. A. Hodges, late of Wilmington, one of the most active and efficient members of the Board of Health, having resigned on account of removal from the State, Dr. John Whitehead, of Salisbury, a leading physician of the Piedmont section, has been elected to fill the vacancy.

From the *Bulletin* of the North Carolina Board of Health we find that during October there were 155 deaths in 24 towns, aggregating 122,504 population; 80 were of colored people, and 51 were of children under five years of age.

The annual death-rates were 126 per 1000 for the white population, 18.7 for the colored population, and 15.2 for the total. There were 23 deaths from consumption, 9 from typhoid-fever, 19 from malarial fevers, and 19 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 12. Annual death-rate, 12.0 per 1000.

Charlotte, 14,000: Total deaths, 27. Annual death-rate, 23.1 per 1000.

Raleigh, 15,000: Total deaths, 24. Annual death-rate, 19.2 per 1000.

Wilmington, 22,000: Total deaths, 42. Annual death-rate, 22.9 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

The *Monthly Sanitary Record* furnished the following report for the month of October: Fifty cities and towns, having an aggregate population of 1,270,570, returned 1740 deaths, of which number 529 were under five years of age. The annual death-rate was 15.25 per 1000. Zymotic diseases caused 423 deaths, and consumption, 203.

One hundred and eleven villages, with an aggregate population of 163,498, returned 254 deaths, of which number 48 were under five years of age. The annual death-rate was 18.64 per 1000. Zymotic diseases caused 84 deaths, and consumption, 25.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

Philadelphia, 1,115,562 : M. Veale, Health Officer, reports : In the four weeks ending November 25th, 1893, there were 1598 deaths, of which number 515 were under five years of age. Annual death-rate, 18.5 per 1000. Deaths from consumption numbered 190, and from zymotic diseases, 236.

Pittsburg, 264,000 : J. Guy McCandless, M.D., Registrar, reports : During the four weeks ending November 25th, 1893, there were 384 deaths, of which 136 were under five years of age. Annual death-rate, 18.58 per 1000. Zymotic diseases caused 84 deaths, and consumption, 30.

RHODE ISLAND. ———, Secretary, Providence.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of October, were : Typhoid-fever, malarial-fever, diphtheria, consumption, scarlet-fever, tonsilitis, pneumonia, whooping-cough, dysentery, bronchitis, mumps, and measles.

Chattanooga, 27,000 white and 13,000 colored : Total deaths, 41—22 of which were colored, and 17 under five years of age. Annual death-rates, 18.4 for the white population, and 20.03 for the colored, per 1000.

Memphis, 33,800 white and 27,700 colored : Total deaths, 87—49 of which were colored, and 20 under five years of age. Annual death-rates, 13.49 white, and 21.21 colored, per 1000.

Knoxville, 31,273 white and 9112 colored : Total deaths, 35—14 of which were colored, and 12 under five years of age. Annual death-rates, 8.05 white, and 18.43 colored, per 1000.

Nashville, 54,595 white, 33,159 colored : Total deaths, 133—68 of which were colored, and 51 under five years of age. Annual death-rates, 14.28 white, and 24.60 colored, per 1000.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—J. T. Reeve, M.D., Appleton.

Milwaukee, 260,000: U. O. B. Wingate, M.D., Commissioner.

During the month of November there were 380 deaths reported, 171 of which were under five years of age. The annual death-rate was 17.54 per 1000. Zymotic diseases caused 111 deaths, and consumption, 22.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 567,408: Albert B. Martinez, Director-General of Municipal Statistics.

HYGIENE OF CITIES AND THE SERVICE OF WATER IN PARIS is reported in *Le Progrès Médicale*, October 7th, as follows:

"The Prefect of the Seine has instituted an inquiry into the proposition to use and conduct water from the springs of Loing and of Lunain to the city. This project has for its object to give to Paris the quantity of spring water which the progressive increase in the population of the city requires. The water of the springs taken will be brought to the reservoir of Montsouris, which already receives the waters of the Vanne, and are six in number. Four of them—the La Joie, Chainteauville, Bignons, and the Sil—empty into the Loing at Nemours; the other two, a little below that city—those of Villerne and of St. Thomas—empty into the Lunain, an affluent of the Loing, which it enters at Episy. These springs are the property of the city of Paris, and represent an average daily supply of 50,000 cubic metres. These waters, like those of the Vanne, the course of which they follow, are destined for the supply of the left bank. The expense, including indemnity for the acquisition of land, for damage caused to proprietors and to factories is estimated as 25,000,000 francs."

MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

Measles, or *Rubeola*, technically speaking, according to the conclusions of M. Sevestre, in a paper read before the Société Médicale des Hospitaux recently (*La France Médicale*, November 3d, 1893), is :

1. A special disease, having an individual autonomy which distinguishes it from roseola and from scarlatina. Heretofore this disease has been of rare occurrence in France, but this rarity is, perhaps, apparent only, and it would be more correct to say that it has been unknown or not recognized.

2. Epidemics of rubeola progress by successive eruptions, separated by intervals corresponding with the period of incubation, which is at least fifteen days. The first cases may pass by unobserved because of the mild symptoms which its appearance generally presents.

3. Rubeola is contagious from the beginning, as well as roseola. Hence, when the patients are isolated it is too late to prevent the disease, for they have already spread it around them. The proper course under such circumstances is to isolate suspects—that is, children who have been in contact with the patients. These should be watched, especially after the twelfth day of contact, so that they may be isolated the moment the first symptoms appear. Unfortunately there are no prodromata in the greater number of cases, and isolation, as a preventive, is consequently extremely difficult.

4. When the disease has fully run its course, which rarely requires more than eight days, the patients recovering from it are no longer contagious, and can be immediately admitted to the society of other children. As regards disinfection, it may be very useful in some cases, but I do not consider it at all indispensable, because the microbe of rubeola, which is, however, unknown, must have, like that of roseola, a very limited vitality.

M. Béclère agreed with the conclusions of M. Sevestre regarding the short duration of the period during which measles

is contagious; said he had published the report of a case which fully proves the correctness of this conclusion. Rubeola is transmissible only during the eight days following its beginning; disinfection seemed to him to be entirely useless.

M. Galliard remarked upon the great stress that has been laid upon the swelling of the glands of the neck in rubeola. He had looked for it in very many cases, and had not been able to find it; it is probably a phenomenon not so important as it has been reported to be.

M. Sevestre, on the contrary, said he had seen this phenomenon very fully developed.

M. Béclère described an outbreak of the disease in a family under his care, in which he was able to determine very exactly the time of incubation of the disease. In one case the eruption did not appear until the expiration of seventeen days; in another after nineteen days. In all the others it made its appearance about the fifteenth day.

INJECTIONS OF CAMPHORATED NAPHTOL IN THE TREATMENT OF TUBERCULAR PERITONITIS WITH ASCITES.—At the session of the Société Médicale des Hopitaux, held October 27th, 1893 (*La France Médicale*), M. Rendu presented a patient who entered the hospital in the month of June last, emaciated, and abdomen distended with a considerable amount of ascites. The disease had its beginning in digestive troubles. The liquid was free in the abdominal cavity, and toward the gastric region a very marked thickening of the tissues was remarked; besides, a double effusion into the pleural cavity was at first observed, and the presence of tubercular peritonitis was the only inference that could be drawn from these facts. After observing the patient for eight or ten days, M. Rendu removed, by aspiration, about seven litres of fluid, and at the same time injected eight to ten grammes of naphtol, which he left in the abdominal cavity. A slight febrile reaction followed, which, however, soon disappeared. The ascites was not reproduced; but a peritoneal cake, indicating the presence of peritoneal adhesions, was observed. This thickening did not last long, for it diminished progressively, and about the end of July very little of it remained.

At present the patient is perfectly cured. Along with these

results, the effusion into the pleural cavity disappeared entirely. This woman in a few months has increased remarkably in weight.

M. Le Gendre: "Tubercular ascites has been known sometimes to disappear spontaneously. In a little girl, seven or eight years old, who, with tuberculosis of the upper lobe, developed an ascites, we simply applied bandages containing iodine or collodion over the abdomen. Some time after this I saw this little patient, whom I have observed attentively for some time, and I can say that the ascites has entirely disappeared. The child's father thought that this result was brought about by the use of a bicyclette which he caused the child to use. Although this exercise may have contributed to the result of causing increased perspiration, it is much more probable that the ascites disappeared spontaneously."

M. Du Cazal: "In the army, cases of tubercular peritonitis are frequent, and these are the cases that give us the greatest number of cures, while it is impossible to attribute such results to one kind of treatment more than to another."

M. Rendu: "The spontaneous cure of tubercular disease of the serous membranes, especially of the peritoneum, is not doubtful, and to these may be likened cases in which the cure has been obtained as the result of simple remedies, so that they resemble completely, or very nearly, spontaneous cures. Cases of this kind are not, however, very rare. It is this fact that has induced me to present to you this case. Her history proves that it is necessary to try to modify the tubercles of the serous membrane by means of antiseptics before having recourse to dangerous surgical means, and that the simpler may be entirely satisfactory. What has surprised me most in this patient is the rapid disappearance of the peritoneal thickening."

M. Fernet: "It is necessary to be very careful in the employment of camphorated naphtol, as injections in the serous membranes, especially when these membranes are seriously involved and for a long time and when much false membrane has developed."

M. Le Gendre: "In the experiments made, under the direction of M. Bouchard, I have formerly injected camphorated naphtol into the pleural and peritoneal cavities of animals, but

they died in thirty or forty minutes after the injection, with all the symptoms of convulsions. As nothing was found at the autopsy, we were led to suppose that death was due probably to reflex action induced by the pain caused by the injection."

In regard to the patient of M. Rendu, as he left wisely in the peritoneal cavity the fifth part of the ascitic liquid, the naphtol injected was much diluted. In these conditions, its local, irritating action and the pain consequently following it could not have been very severe.

BROMIDIA is particularly commended by the *Chicago Medical Standard*, November, 1893, for its superiority to other hypnotic preparations, because it leaves no unpleasant sensations on awaking.

THE THERAPEUTIC MERIT OF COMBINED REMEDIES.—The following excerpt from an article under this caption, in the *Virginia Medical Monthly*, by Stephen J. Clark, M.D., No. 66 West Tenth Street, of New York, plainly outlines the useful combination of two leading remedies in materia medica:

"Binz claims specific antiseptic powers for quinia; other writers are in accord with him on this point, and report good results from large doses in septicæmia, pyæmia, puerperal fever, and erysipelas. It is a germ destroyer of the bacilli of influenza (*la grippe*). A full dose of quinine and antikamnia will promptly relieve many cases of this disease. In the gastric catarrh of drunkards this combination is valuable. Quinia is a poison to the minute organism—sarcina; and antikamnia exerts a soothing, quieting effect on the nerve filaments. A full dose of antikamnia and quinia will often arrest a commencing pneumonia or pleuritis. This combination is also useful in the typho-malarial-fever of the South—particularly for the hyperpyrexia—both quinia and antikamnia, as previously said, being decided fever reducers. The combination of antikamnia with quinia is valuable in the racking headache, with high fever, attendant upon malarial disorders. It is likewise valuable in cases of periodical attacks of headache of non-defined origin; of the so-called 'bilious attacks;' of dengue; in neuralgia of the trigemini; in that of 'ovarian catarrh;' and, in short, in nearly every case where quinine would ordinarily be prescribed."—*New York Medical Journal, Nov.*, 1893.

EDITOR'S TABLE.

SANITARIAN, JANUARY NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

REPORT OF THE SURGEON-GENERAL OF THE ARMY, FOR THE FISCAL YEAR ENDING JUNE 30TH, 1893.

UNDER the provisions of the act of August 5th, 1892, making appropriation of $19,000 "for the support and medical treatment of ninety-five medical and surgical patients who are destitute in the city of Washington, under a contract to be made with the Providence Hospital by the Surgeon-General of the Army," a contract was duly entered into with the institution named, and has been fulfilled to my satisfaction and without complaint on the part of the persons sent there for treatment. The following is a statement of the amount of relief afforded under the appropriation:

Number of patients in hospital July 1st, 1892, 95; number of patients admitted during the year, 933; total number of patients treated, 1028. Average number of patients admitted per month, 78; number remaining in hospital June 30th, 1893, 94; total number of days' treatment afforded, 37,904; average number of days' treatment per patient, 37; average number of patients treated per day, 104; longest term of treatment (days), 365; shortest term of treatment (days), 1; number of patients in hospital during the whole year, 36.

The patients included in the statement represent all classes of diseases, acute and chronic, except those of a contagious nature. The patients shown as having remained in hospital during the whole year are incurable, without home or friends.

The capacity of the hospital is 16 beds for officers and 64 for enlisted men; total, 80. The officers' division is closed in July, August, and September, but during the autumn, winter, and early spring there is difficulty in accommodating

the applicants. This may be overcome in part by a regulation recently issued by the War Department limiting the authority to enter to two weeks—that is, the permission is void after two weeks' delay. Thirty officers were treated during the last fiscal year, of whom 19 were Army officers on the active list; of these 1 was transferred to the Government Hospital for the Insane, 4 have been recommended by boards for retirement, and the remainder are believed to be on duty in varying degrees of health. There were three Navy officers, none of whom recovered their health. One officer of the Revenue Marine became quite well. The other officers were on the retired list of the Army and Navy.

Of the enlisted men there were taken into the hospital from other posts 75 soldiers, and 15 were present on the beginning of the year. Of these 90 cases, 69 were terminated, 3 by death, 19 by discharge for disability, 2 by discharge by purchase, 4 were transferred to their stations not improved, 1 deserted, and 40, or 58 per cent, were returned to duty. Of 40 completed cases of articular and muscular rheumatism, 25, or more than 60 per cent, were returned to duty. Of those discharged for disability, the ability of more than 68 per cent to support themselves by manual labor was estimated at one half or more. The subsequent histories of 41 cases returned to duty in the calendar year 1892 show that six months after they left the hospital 32, or 78 per cent, were doing duty.

The admission of men to the general hospital was much simplified by a general order issued in September, 1892, apportioning the beds for enlisted men among the military departments, and authorizing department commanders to send men directly to the hospital; and it was hoped that more soldiers would be enabled to take advantage of it. This, however, has not been the case; the number of admissions has not materially altered. Three times as many cases could be treated in the course of the year as are received. The average residence in hospital of the men returned to duty was 105 days and of those discharged for disability 104 days.

Medical Officers.—The requirements of the Army, as regards medical officers during the past year, have been as follows:

Number of permanent posts and stations, 91; number of temporary posts and substations, 11.

Army Medical School.—The establishment of an Army Medical School in the city of Washington, D. C., was authorized by General Orders No. 51, Adjutant-General's Office, June 24th, 1893, for the purpose of instructing approved candidates for admission to the Medical Corps of the Army in their duties as medical officers. The course of instruction at this school will extend over four months, and will be given annually beginning on the first day of November. The faculty will consist of a president, who will be responsible for the discipline of the school and will deliver a course of lectures on the duties of medical officers in war and peace; a professor of military surgery, including the care and transportation of wounded; a professor of military hygiene, including practical instruction in the examination of water, air, food, and clothing from the sanitary point of view, and a professor of clinical and sanitary microscopy, including bacteriology and urinology. The professors will be selected from among the senior medical officers of the Army stationed in or near the city of Washington. In like manner will be selected as many associate professors as may be required to give practical laboratory instruction in the methods of sanitary analysis, microscopical technique, clinical microscopy, bacteriology, etc.

Recruiting.—The number of applicants for enlistment and re-enlistment during the year was 25,012; white, 22,692; colored, 2107, and Indian, 213. Of the white applicants, 8259, or 36.4 per cent, were accepted, 13,662, or 60.2 per cent, were rejected, while 771, or 3.4 per cent, declined enlistment after examination. Of the colored men, 807, or 38.3 per cent, were accepted, 1227, or 58.2 per cent, were rejected, while 73, or 3.5 per cent, declined. Of the Indians, 92.5 per cent were accepted, 7 per cent rejected, and 0.5 per cent declined.

In addition to those enumerated above, 179 Indians applied for enlistment as scouts, of whom 177 were accepted and 2 rejected.

Causes of rejection.—Of the 25,012 men examined, 14,904, or 59.59 per cent, were rejected on the primary examination, the rejection being recorded in one fifth of this number, or 11 per cent of the total number examined, as due to general unfitness or unclassified causes. Of the classified causes dis-

eases of the eye were most prolific of rejection, having been found to a disabling extent in 8.5 per cent of the applicants. Developmental diseases caused the rejection of 4.4 per cent; diseases of the genito-urinary organs, 3.9; minority or under the minimum age, 3.8; diseases of the digestive system, 3.3; excess of height, weight, or obesity, 0.5; under height, weight, or size, 5.9; imperfect knowledge of English, 2.2; illiteracy only, 0.08; moral character, bad or doubtful, 1.9. Venereal diseases caused relatively more rejections among the colored men; alcoholism more among the whites. The percentage of illiteracy was .079 among the white, 0.142 among the colored men. Diseases of the eye were also more disabling among the whites, 8.8 per cent as compared with 6.4. Venereal diseases and diseases of the respiratory organs were the prominent causes among the small number of Indians examined.

Health of the Army.

During the past year the health of the Army has been excellent. Perhaps at no time heretofore has the Surgeon-General been able to invite attention to a better record of health and consequent efficiency, and this although some of the rates have been materially increased by an undue proportion of sickness among the Indian companies.

The admission rate per 1000 of strength was 1270.42, as compared with 1364.78 during the previous year and 1459.65 during the preceding decade. The lowest recorded admission rate, 1247 in 1887, is practically the same as that now reported. The number and duration of the cases were equivalent to a non-effective rate of 39.60, as compared with 42.01 during the previous year and 43.41 during the preceding decade. The non-efficiency may be expressed also by the statement that each officer and man of the Army was, on an average, sick for 14.5 days during the year, as compared with 15.3 and 15.9 days, respectively, during the previous year and each of the years of the previous decade. The number of men discharged for disability was 18.35 per 1000 of strength, as against 17.23 (the lowest annual rate to which these discharges have been brought) in the previous year and 30.70 the average of the ten years preceding. The death-rate from all causes was 6.44, comparing favorably with 8.05 and 8.75, respectively,

for the previous periods already mentioned, as well as with 6.33 for the year 1889, the lowest annual death-rate hitherto reported. Excluding deaths from injury, the deaths from disease were equivalent to a rate of 4.36 per 1000 of strength, as against 5.03 and 5.81, respectively, for the previous year and decade and against 3.95 for the year 1889.

Reporting in detail on the health of the different posts, reference is made to former reports of the prevalence of sickness in a general way proportional to the strength of the command, posts with a strength of over 200 men having had rates of admission and non-efficiency higher than the average and smaller posts having had rates correspondingly lower. This was explained on the assumption that at large posts men with trivial ailments were taken on sick report, while at smaller posts, where every available man was required to carry on the current work, the same ailment would be treated without a formal recognition of its existence. During the past year, however, this rule has not held good. While all the posts have lessened their rates, the largest posts (those with over 400 men) have been so successful in effecting this as to bring their sickness down to the average. The smaller posts continue below the average, but their low rates are offset by the posts garrisoned by 200 to 400 men. Whether the present low rates of the large posts is an accidental occurrence remains to be seen. They could with all due propriety be claimed as the result of the careful sanitary supervision that has been exercised in view of the possibility of invasion by cholera.

The admissions for all diseases and injuries among these 80,005 officers and men were equivalent to the annual rate of 1339.51 per 1000 of strength. Among officers the rate was only 855.29, as compared with 1370.81 among the men; in the infantry 1269.10, but considerably higher in the cavalry, artillery, and engineers. Men between twenty-five and twenty-nine years gave about the average rate; below this age the rates were higher; above it they were correspondingly reduced. Nativity does not appear to have had much influence in determining this general rate of admission; but, classing the troops by their length of service, it is found that those under one year had a rate of 1914.42, while those over one year had only 1205.37.

The non-efficiency or number constantly sick per 1000 of strength is the best measure of the sickness affecting military bodies. The average rate of the Army was 41.43.

Reference is made to sanitary reports furnished monthly by surgeons in accordance with the requirements of the Army regulations, without any specified form, so that the medical officers are free to follow their own views as to the best method of presenting the opinions and suggestions devoid of the liability to routinism by the mere filling in of formulated reports. These sanitary reports filed in the office of the Surgeon-General constitute the sanitary record of each of the posts. As summed up, great improvements have been made in some of the posts during recent years, but at a few the buildings are dilapidated and the sanitary arrangements markedly deficient. The impurity of the water supplies and bad drainage account for much sickness at several posts, and some of them seem to present almost insuperable difficulties—*e.g.*, at Fort Adams, R. I.: "In 1888 well-water was used, but this having been found to be of bad quality the water of the Newport Water Company was introduced. This water, however, speedily failed to give satisfaction. It is a surface or pond water, largely charged with vegetable impurity, and has been reported upon unfavorably by many public analysts and sanitary chemists. During the year the post surgeon invited attention to the matter, and the well-water and city water were again examined, the result in both instances being unsatisfactory. Suggestion was made of artesian borings, but the United States Geological Survey entirely disapproved of any effort in this direction. Thereupon the Medical Department recommended the use of a condenser capable of providing 2000 gallons of drinking water daily."

The special recommendations with which the report concludes are:

The introduction of electric light into the Army and Navy General Hospital, Hot Springs, Ark., and an increase of the accommodations for officers at the hospital.

White linen or cotton duck as the most suitable wear for men occupied in ward or dispensary duties.

The reference of all plans for the construction or alteration of buildings or for sanitary improvements at military posts to

a board of officers, in which the Medical Department shall be represented.

The disuse of casemates as living and sleeping-rooms.

A return so far to former methods as to provide public quarters for a limited number of married enlisted men.

A consideration of the want of equity in the present method of heating the quarters of officers.

A prohibition of the practice of flushing barrack floors with water for the purpose of cleaning them.

The construction of crematories for garbage at all permanent posts, particularly when the reservation is small and surrounded by civil communities.

The establishment of post laundries at large posts to obviate the necessity of sending clothes to various localities in neighboring cities or other civil settlements.

THE MEDICAL HISTORY OF THE CAMPAIGN IN DAHOMEY, during the last war, according to the statement of Dr. Barthélemy (*Archives de Médecine Navale*), shows that the loss in wounded was very great. The firearms of the Dahomeyans were, with few exceptions, guns which sent projectiles from 1200 to 1500 metres. The losses in the first group, in men killed on the field of battle in the different engagements that were fought from Senegal or Dogba, up to the walls of Kana, were 18 Europeans and 15 tirailleurs, or haouassas, and the whole number of wounded whose removal from Porto-Novo was declared urgent was 46 Europeans and 47 Senegal tirailleurs, or haouassas. Almost all the wounds were received on the upper part of the body—due to the tactics employed—either the Dahomeyans advanced to the attack when the soldiers were in bivouac, or when the Europeans attacked them, at the first volley the men received the order to take the kneeling position for firing—a position in which the abdominal region is well protected. The whole number lost in the first group was 226 men, divided as follows : killed, 33 ; wounded, 92, and 101 removed for sickness.

In a medical point of view, the affections from which the effective column suffered most were variola, paludism, and dysentery. The cases of isolation were rare, although the marches were ordered at all hours of the day. The country

was covered with vegetation; the halts were almost always made beneath the shade, and the men had an outfit of coarse cloth, made very large so that the air circulated very freely around the body. The helmet was put on at reveille, and the men did not lay it off until sundown.

FOR THE CARE OF THE TEETH.—In reply to an inquiry, tooth *powders*, by and large, do more harm than good. Chalk and orris, the most common mixture, and all other powders are more or less liable to contain gritty particles injurious to the enamel. Tooth soap, indeed any pure soap, is better, and the misrepresentations of it—by tooth-powder makers or other persons—that it is injurious to the gums, is a fallacy. Pure soap is antacid and antiseptic, preventive of tartar and destructive of the putrescible particles of food clinging to the teeth and gums after eating. Moreover, hard tooth brushes, like tooth powders, should be avoided. Those made of badgers' hair are greatly superior to those made of bristles, and, used with soap, are much more efficacious in cleansing the teeth without injury to the gums. Hard tooth brushes and powder, on the contrary, frequently cause irreparable injury to the gums as well as the teeth, by breaking their attachment and lodging irritating and insoluble particles between.

Besides soap, particularly at night, and, above all, if the teeth are defective, and for persons who wear artificial teeth and remove them before retiring, Listerine—a teaspoonful to half a glass of water as a mouth wash and gargle is a valuable antiseptic and deodorant, promptly and effectually destroying all odors emanating from diseased gums and defective teeth, and the disagreeable clamminess which otherwise obtains on the removal of artificial teeth.

OBITUARY.

JOHN CHARLES PETERS, M.D., late of New York, died at Williston, L. I., October 21st, 1893, aged seventy-four years.

Though a busy medical practitioner and among the foremost in the establishment of educational advantages promo-

tive of curative medicine, Dr. Peters will be remembered longest by his contributions to the study of the causes and prevention of epidemic diseases. His contributions to THE SANITARIAN on the origin and conveyance of cholera, notes about the cholera in Egypt, sanitary requirements in New York, scarlet-fever among horses, how to keep stables sweet and clean, etc., more than a dozen years ago, are fruitful sources of knowledge applicable to the present time ; and his later contributions on the New York water supply and the nuisances of the Croton Valley watershed, are, unfortunately, owing to continued negligence and the persistent resort to makeshifts, still pertinent. Few writers took equal pains in surveying the premises, or described conditions with greater force and perspicuity whatever he took in hand. His close observation, extensive reading, sound judgment, and progressive spirit kept him at all times in line with the foremost of his profession.

Dr. Peters had practised medicine in New York since 1842. He was born in this city, and was educated at the College of Physicians and Surgeons, and the medical universities of Berlin and Vienna. He was one of the founders, and at one time was President, of the New York Pathological Society, and for many years was editor of the Society's proceedings, was President of the New York County Medical Society, and a member of the New York Academy of Medicine, and of nearly all leading medical societies in the city. He was the physician and personal friend of Washington Irving. Dr. Peters made a special study of Asiatic cholera, and his library on cholera was said to be the most complete in the country. He wrote many pamphlets on this subject. He was associated with Dr. Edmund C. Wendt in preparing a treatise on cholera, and in 1866 wrote Peters's "Notes on Asiatic Cholera," a standard work. Dr. Peters suggested new remedies in the treatment of consumption, Bright's disease, and membranous croup. In 1873 he travelled through the South and Southwest to study cholera, and afterward assisted in preparing a report on cholera which was published by order of Congress. In 1878 he did valuable service in the threatened yellow-fever epidemic. Dr. Peters published treatises on diseases of the brain and nervous system, and assisted Dr. Alexander S. Wotherspoon

in translating Rokitansky's "Pathological Anatomy." With Dr. Frederick G. Snelling and others he published "Materia Medica" (1856–60). He retired from active practice about eight years ago, and gave his time to consultations alone until three years ago, when he removed to his Long Island home, where he was stricken with paralysis, to which he ultimately succumbed. Personally, Dr. Peters was a lovable, modest, earnest man, kind and considerate to all, respectful of true merit, and instinctively inspiring in all who knew him a becoming and sincere appreciation of the well-rounded character of a Christian gentleman.

CHARLES HARRIS FISHER, M.D., Secretary of the Rhode Island State Board of Health, died at Buffalo, N. Y., October 21st, aged seventy-one years. He graduated from the Dartmouth Medical School in 1848. From his first election to the Rhode Island Medical Society in 1850, he served in the various offices, and was made its President in 1877. He was several times State Senator, and for some years was a member of the State Board of Education, as well as a trustee of the State Normal School from its establishment. From 1862–65 he was State inspector of recruits for the Army and a member of the Board of Exemption. In 1878 the Rhode Island State Board of Health was organized, and Dr. Fisher was unanimously elected its Secretary, which position he filled until his death.

In the death of Dr. Fisher the public incurs a severe loss. Associated with the State Board of Health from its inception, in fact, being one of its prime movers and one of the framers of its constitution, he had become so identified with its interests, so necessary to its successful management, that it will be difficult to supply his place. Not only by his peculiar fitness, but by his personal qualities did he lend dignity and character to his position, not only by the ripeness of his judgment, but by his courteousness and affability, win the esteem and confidence of the public and the affection of his friends.

Dr. Fisher in this, as in other official capacities which he had at different times abundantly enjoyed, regarded a public office always as public a trust, and by a faithful and diligent performance of it earned for himself an enviable reputation, the just reward of personal honesty and public integrity.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

THE PHYSIOLOGY OF THE SENSES. By JOHN GRAY MCKENDRICK, M.D., LL.D., F.R.SS.L. and E., Professor of Physiology in the University of Glasgow, and WILLIAM SNODGRASS, M.A., M.B., C.M., Muirhead Demonstrator of Physiology in the University of Glasgow. 12mo, pp. 388, with 127 illustrations. Price, $1.50. New York: Charles Scribner's Sons.

The aim of this book is to give a succinct account of the functions of the organs of sense as these are found in man and the higher animals. This object is cleverly introduced by a terse description of the basis of sensations and the exercise of the senses—the nerve matter and the terminal organs, the nerves and nerve currents, the spinal cord and brain. Then follows the description of the organs of the senses, beginning with touch, giving the anatomy of the organs respectively, admirably illustrated, and demonstrating their functions by the rehearsal of numerous experiments. The physiological conditions of sensation are concisely summed up in the concluding chapter, explaining the nature of the physiological basis of sensation, pertaining to the speculative philosophy of thought, and the co-operation of the senses to that end, insomuch that the attentive reader or student will not only be able to have a clear comprehension of the physiology of the senses, but will be suitably prepared to enter upon the more recondite questions that underlie physiological psychology.

THE CHILD PHYSICALLY AND MENTALLY. Advice to a Mother according to the Teaching and Experience of Hygienic Science. Guide for Mothers and Educators. By BERTHA MEYER. Translated by FREDERIKE SALOMON. Booklet,

in paper. Pp. 155. Price, 25 cents. New York: M. L. Holbrook Company.

Excepting the direction for the use of cows' milk for children that require it, that, "as soon as the milk is cooled after milking, it must be boiled for twenty minutes," which would render it less nutritious and indigestible, instead of slowly warmed up to a temperature of 175° F., which effectually nullifies the conditions of disease germs and kills them if they are present without impairing the nutritive qualities and wholesomeness of the milk—excepting this, and the need of the qualification here offered instead, this is an admirable manual for mothers and nurses and thoroughly commendable.

PRIMER OF PHILOSOPHY. By DR. PAUL CARUS. 12mo, pp. 232. Price, $1. Chicago: The Open Court Publishing Company.

Primer, in this instance, means the clear presentation of the subject in such terms as will leave no room for equivocation in a terse criticism of Comte, Kant, John Stuart Mill, Schopenhauer, Herbert Spencer, and others, and the urgency of a unitary conception of the world, as defined by monism.

"Monism stands upon the principle that all the different truths are but so many different aspects of one and the same truth. . . . There is but one truth, and that truth is eternal." In the study and elucidation of this truth, God and the world are considered to be abstracts, and not things in themselves; "first cause," a misnomer for "ultimate reason," and, as an object of worship, as unreasonable as ultimate effect; and science—established truth—the basis of religion and divine worship. Aside from the urgency of monism, as the philosophy of religion, of all "primers" that have ever come to our notice, this is the most comprehensive of the subject of which it treats—philosophy; not the author's philosophy only, but a summary of philosophy as taught by the most profound thinkers and teachers of modern science.

EXERCISE FOR PULMONARY INVALIDS. By CHARLES DENISON, A.M., M.D., Professor of Diseases of the Chest and of Climatology, University of Denver; ex-President American Climatological Association; Author of "The Rocky Moun-

tain Health Resorts;" "The Annual and Seasonal Climatic Maps of the United States;" "The Preferable Climate for Consumption," and other papers. Denver, Col.: Chain & Hardy.

This is an ornate little book of twenty-six pages, appropriately illustrated, and of great practical utility to persons predisposed to or afflicted with pulmonary consumption. The writer is well known to be one of the most accomplished authorities of the time in the treatment of consumption, and this is a particularly valuable contribution of means for its prevention in the predisposed, as well as to the best treatment.

DIET FOR THE SICK. By MISS E. HIBBARD, Principal of Nurses Training School, Grace Hospital, Detroit, and MRS. EMMA DRANT, Matron of Michigan College of Medicine Hospital, Detroit; to which has been added COMPLETE DIET TABLES for various diseases and conditions, as given by the highest authorities. Price, 25 cents, postpaid; six for $1. Detroit, Mich.: The Illustrated Medical Journal Company.

This little book is a worthy supplement to any cook book, as it deals only with the dishes suitable for the sick and convalescent; the receipts being favorite ones in use daily in the hospitals wherein the authors are employed. To this has been added the various authorized diet tables for use in anæmia, Bright's disease, calculus, cancer, chlorosis, cholera infantum, constipation, consumption, diabetes, diarrhœa, dyspepsia, fevers, gout, nervous affections, obesity, phthisis, rheumatism, uterine fibroids. It also gives various nutritive enemas. The physician can use it to advantage in explaining his orders for suitable dishes for his patient, leaving the book with the nurse.

BULLETIN OF THE HARVARD MEDICAL ALUMNI ASSOCIATION, Report of the Third Annual Meeting, held in Boston, June 27th, 1893, is enjoyable as usual, for besides the continued excellence and vigor of the Institution which it represents, as shown by official records and statistics, it comprises dinner wit and wisdom specially worthy the attention of modern medicine. For example (honored guest, A. Jacobi):

"Thirty years ago I was offered the place of professor of diseases of children. I replied I could not think of accepting, I did not know enough. My friend, who was a professor and knew all about it, laughed, and replied, if he were offered a chair of nautics he would begin lecturing to-morrow. That is, gentlemen, how I became professor of pediatrics, only because there was no place vacant for a Columbus. [*Continued laughter.*] Others, as I suggested, are cousins, friends, assistants in private practice. To be rich, well connected, and have relatives among hospital and college trustees is a very good mental equipment. [*Laughter.*] Have a friend who is wealthy and endows a chair for you. In Germany, be a son-in-law of a leading professor. But lately I read of the death of a German *Privatdocent*, at the ripe age of seventy-four, whom I knew when he was already *Privatdocent*, but proved his incapacity for advancement by refusing to marry the daughter of the full chair. [*Laughter.*] Write a text-book while you are young and fresh. [*Laughter.*] There are so many that you can extract half a dozen, and make the seventh with the aid of very little brains and much more posteriora. Operate on two alleged lacerations daily, and let no more than 50 per cent die of septicæmia. Prove that the best place for ovaries is in a jar. [*Great laughter.*] Render yourself a parody of the great Philadelphian, who makes a diagnosis before he cuts babies' skulls, by sawing without diagnosis. The first is seen and heard and heard of: the latter is not. On that line there are many fine possibilities. [*Laughter.*] There are not so many in others."

TRANSACTIONS OF THE MEDICAL AND CHIRURGICAL FACULTY OF THE STATE OF MARYLAND. Ninety-fourth Annual Session, held at Baltimore, April, 1892. W. B. CANFIELD, Secretary.

A pamphlet of one hundred and twenty-four pages, comprising committee reports, minutes of the proceedings, lists of members, and the presidential address, "The Etiology of Acute Lobar Pneumonia, considered from a Bacteriological Point of View," by William H. Welch, M.D., Professor of Pathology, Johns Hopkins University, and eminently practical papers of interest to all medical practitioners.

NOTES AND NOTICES.

SANITARY SCIENCE, which now forms the citadel in which the public health is preserved, was entirely unknown during the Middle Ages. Not much inquiry is requisite for the purpose of establishing this fact. So far, however, as London is concerned, some important remarks may be quoted from the address of Sir Charles Cameron delivered at the Sanitary Congress last year.

"From 1700 to 1750 (he says) the death-rate in London was so high that the population stagnated. In the former year the inhabitants numbered 665,200, and in the latter year 653,900. During this period the deaths were in the ratio of about 1 per 30 persons living. By 1801 the population had crept up to 777,000, and the deaths had fallen to 1 in 41 persons living. This great improvement in the state of public health in London was not, except to a trifling extent, the result of sanitary legislation. People were becoming more enlightened on many matters affecting their health, partly owing to a more general knowledge of chemistry, physiology, and other sciences relating to man and his surroundings. When those entrusted with the conduct of public affairs became aware how much the health of the people was affected by bad water, by foul emanations, and even cesspools, and by too great a density of population, they began to secure supplies of pure water, to construct proper house drains and street sewers, to remove systematically filth from houses, and to widen streets. The promulgation of the natural laws of health preceded the enactment of laws of health by the State. Jenner's discovery of prophylaxis in small-pox had for its corollary the vaccination laws. The chemical analysis of water was the basis of Acts of Parliament relating to water and rivers."

From these beginnings, then, the great problem of how to maintain the health of a community of upward of five millions has been gradually solved, as the result of which London now occupies the first position among the capitals in the world for salubrity and a low death-rate.—*From "What London People Die Of," by Hugh Percy Dunn, F.R.C.S., Nineteenth Century for December.*

CAPTAIN NATHAN HALE.—An unparalleled thing happened in New York on Saturday, November 25th. A boy—a mere

stripling of twenty-two—more than a century after his death, was given a triumph in the metropolis of his country. The city stopped work, and assembled to witness a pageant of the civil, ecclesiastical, military, and naval services, and to cheer at the unveiling of his statue.

The story of Nathan Hale was told during the week in every public print. It is the story of a boy who, when the commander-in-chief asked "Congress' Own" for a volunteer for extraordinary, dangerous, and, above all, disreputable duty, said to the brother officers who tried to dissuade him, "Every kind of service necessary for the public good becomes honorable by being necessary. I will go;" and who, accordingly appearing that night before Washington in the house of the rich merchant, Robert Murray, on Murray Hill, received the commission of a spy. It is a tale of daring exploit, of capture, of the discovery of incriminating Latin memoranda in a boot, of cruel treatment at the hands of a provost-marshal, and of heroic death.—*Harper's Weekly, December 6th*, 1893.

FOOT-BALL gives an outlet for the superabundant animal spirits which might otherwise find expression in the usual college pranks. It compels its devotees to keep good hours, to observe strict rules of temperance in diet and drink, to refrain from the use of tobacco, to select the most nourishing food, and to be systematic with cold baths, rubbing, and healthy exercise. It teaches, moreover, what American youth most need to learn—prompt and exact obedience to instructions. "I am on the foot-ball team" was the explanation given by an undergraduate when he was asked as to the abandonment of injurious habits; and from Harvard comes the report of one gilded youth who was permitted to remain at the college after his day of probation had passed, in view of the fact that he had joined the foot-ball team.

. . . A calculation made by the professor of physical culture and hygiene at Cornell shows that the men on the intercollegiate athletic teams have a standing 1.2 per cent better than the average of the whole college.—*Colonel William C. Church, in the December Century.*

AN AMERICAN COWBOY—which was Jack—in 1832, accompanied by two companions, penetrated south from Arizona,

and as he looked from the mountains over the fair plain of Bavicora, he said, " I will take this." The Apaches were on every hand; the country was terrorized to the gates of Chihuahua. The stout heart of the pioneer was not disturbed, and he made his word good. By purchase he acquired the plain, and so much more that you could not ride round it in two weeks. He moved in with his hardy punchers, and fixed up Bavicora so it would be habitable. He chased the Indians off his ranch whenever he " cut their sign." After a while the Mexican *vaqueros* from below overcame their terror, when they saw the American hold his own with the Apache devils, and by twos and threes and half dozens they came up to take service, and now there are two hundred who lean on Jack and call him *patron.* They work for him, and they follow him on the Apache trail, knowing he will never run away, believing in his beneficence, and trusting to his courage.—*From "An Outpost of Civilization," by Frederic Remington, in Harper's Magazine for December.*

A SHORT TRIP TO EUROPE is as perfectly feasible and wholly satisfactory a thing as a long one, when one has a definite plan that properly fits the time at his disposal. The beauty of Dr. Lunn's plan for January lies in the fact that the Pilgrim is absolutely relieved of all care and trouble as to those details of travel that take up so much of the time of a stranger in a foreign land, is brought into friendly association with Englishmen worth going around the world to hear and meet, and is permitted to have his glimpse of historic spots under the inspiring guidance of those most deeply conversant with them. A traveller " on his own hook" might spend a year in England without finding half so many opportunities to see and hear men of distinction as Dr. Lunn's January Pilgrimage provides. It is a chance that might well appeal to any man or woman. An ocean passage in winter is not at all to be dreaded; for all sea-captains and experienced travellers testify that there is no calmer month than January on the Atlantic. Moreover, while London is fairly likely to welcome the visitor with a black fog, the rest of England is usually pleasant enough in the winter time.—*From "Some Prospective Pilgrimages," in the December Review of Reviews.*

THE HOME JOURNAL—a Society Journal in the best sense of the term—is the exponent of that literary and art culture which gives grace and refinement to social intercourse. It is an international weekly, and by its foreign correspondence and essays brings its readers *en rapport* with the social life of the great European centres. It is essentially a paper for the home, and in a sense peculiar to itself the only *Home* Journal. New York: Morris Phillips & Co.

ST. NICHOLAS for December, the Christmas number, has at last a cover worthy of its contents. We believe it to be the most beautiful number of a juvenile magazine ever issued. It is printed on heavy paper (which is used even for the advertisements), it has been greatly enlarged, and it contains a most remarkable programme of attractions. Rudyard Kipling's story, "Toomai of the Elephants," is one of Mr. Kipling's greatest efforts. With the merging of "Wide Awake" in *St. Nicholas*, the latter becomes practically the only monthly magazine for boys and girls in America. The Century Company.

THE NEW STANDARD DICTIONARY.—Volume I. of the two-volume edition of the Funk & Wagnalls Standard Dictionary of the English language is announced to be nearly ready for delivery.

The following letter was received by the publishers from a well-known gentleman, prominently identified with the late World's Fair at Chicago:

MINES AND MINING BUILDING, JACKSON PARK, ILL.

Messrs. Funk & Wagnalls:

GENTLEMEN: I am pleased to inform you that the Standard Dictionary has been granted an award (diploma and medal) in group No. 150. The exact wording of all the awards will not be announced for probably three or four weeks.

New York: Funk & Wagnalls Company, 18 and 20 Astor Place; London: 44 Fleet Street; Toronto: 11 Richmond Street West.

A NEW ILLUSTRATED DICTIONARY OF MEDICINE, BIOLOGY, AND COLLATERAL SCIENCES.—Dr. George M. Gould, already

well known as the editor of two small medical dictionaries, has now about ready an unabridged, exhaustive work of the same class, upon which he and a corps of able assistants have been uninterruptedly engaged for several years.

The feature that will attract immediate attention is the large number of fine illustrations that have been included, many of which—as, for instance, the series of over fifty of the bacteria —have been drawn and engraved especially for the work. Every scientific-minded physician will also be glad to have defined several thousand commonly used terms in biology, chemistry, etc. Philadelphia: P. Blakiston, Son & Co.

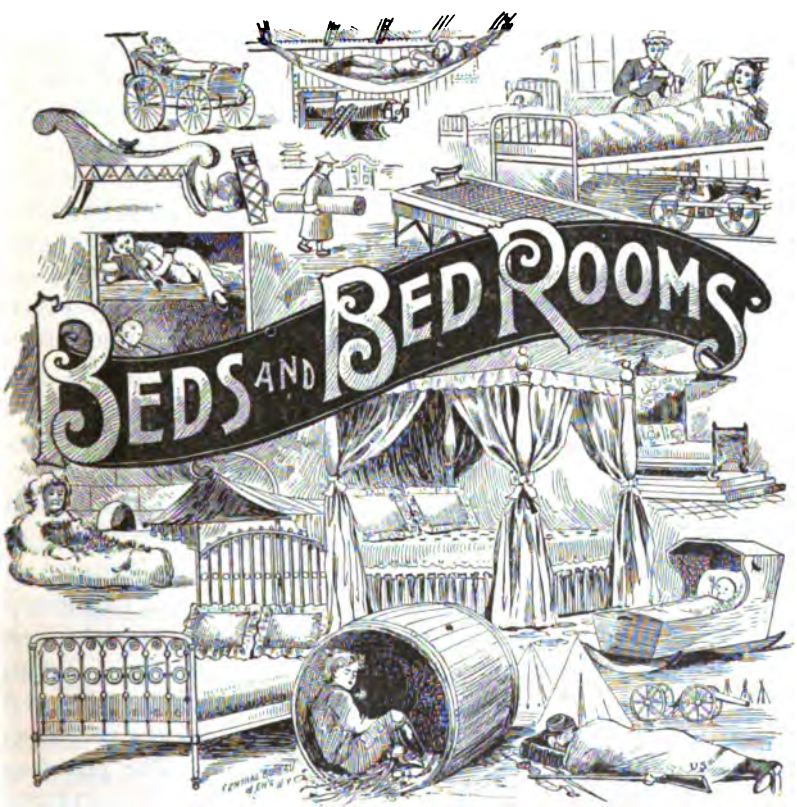
THE INTERNATIONAL MEDICAL ANNUAL, 1894, being the twelfth yearly issue of this eminently useful work, is announced for early issue. It will be the conjoint authorship of forty-one distinguished specialists, selected from the most eminent physicians and surgeons of America, England, and the continent. It will contain complete reports of the progress of medical science in all parts of the world, together with a large number of original articles and reviews on subjects with which the authors' names are especially associated. While the book will be so much improved over previous issues, the price will remain the same as heretofore, $2.75. New York: E. B. Treat, Publisher.

DR. Z. TAYLOR EMERY, Brooklyn's new Health Commissioner, successor to Dr. John Griffin, announced just before this issue went to press, is well and favorably known as one of Brooklyn's most successful physicians. He took his medical degree in Detroit, Mich., whence after a year's service in charge of the Marine Hospital at that place he came to Brooklyn, twenty years ago. Here he soon won recognition among the foremost in his profession and has well maintained it. While his reputation as a practical sanitarian is yet to be made, considering the excellent opportunity at his disposal, he is at least favorably regarded in this direction on account of his praiseworthy activity, while President of the Kings County Medical Society in the summer of 1892, in animating the medical profession throughout the city, and stimulating the efforts of the Health Department to more needful requirements.

THE SANITARIAN.

FEBRUARY, 1894.

NUMBER 291.



COMFORTABLE repose is the prerequisite to sleep, without which healthy existence is impossible. However variable the degree of civilization and the state of health among mankind,

and at every period of life, the bed is the only universal panacea; the sole or the principal means of securing the most comfort in health and the least discomfort in sickness. Yet it is so variable in its fabrication and appointments that good observers are sometimes wont to notice the difference in the physique and stamina of persons dependent upon the quality and conditions of the bed.

Beginning at birth: The downy pillow, the lap of the nurse, the pallet of straw, the board to which the babe of the Winnebago Indian is bound; the bed in arms, in cradles, in cribs, hammocks and baby wagons; the beds of the codlings, and of the gamins; the beds of soldiers, of sailors, and of railway travellers; the beds of invalids, of the insane, and of criminals; and domestic beds in general, from the palace to the hovel—all hold important relations to health and the duration of life. But the *conditions* of the bed, its relation to air, light, cleanliness and temperature take precedence of the material of which it is made; insomuch that, without regard to these conditions, healthy growth and vigor are impossible; and with them the structure of the bed is of consequence in so far only as it is more or less liable to contamination from the surroundings, which will be sufficiently apparent as the reader proceeds.

Savages in all climates commonly stretch themselves on beds of leaves or the skins of animals with or without shelter, according to the requirements of climate and weather.

The East Indian of the present day commonly takes his bed with him in his travels. It consists of a light, portable rug or mattress, and when night overtakes him he has but to unroll and spread it in a clean place, and repose thereon, frequently in the open air in the warm regions, or in a room with open windows. And so, too, indeed, through the interior of China, and of some other Eastern countries, travellers are expected to carry their beds along, the chambers of even the best-appointed inns not being provided with them. The Japanese also commonly lie on mere matting, and for pillows use blocks of wood. That the beds in Palestine, among the common people at least, were of similar lightness and portability is evident from the Scriptures. Jesus saith, "Take up thy bed and go unto thine house" (Matt. 9 : 6). But there were doubtless

some people in Palestine at that time, as there are at the present in China and Japan, provided with richly ornamented couches and beds of different kinds, "with coverings of tapestry, with carved works, with fine linen of Egypt" (Prov. 7 : 16); some for use in the daytime, and others during the night, for it is recorded that "about the heat of the day Ishbosheth lay on his bed at noon" (2 Sam. 4 : 5), and that King David "bowed himself upon the bed" while he received visitors (1 Kings 1 : 47).

The ancient Greeks had elegant couches and mattresses stuffed with wool or feathers that rested on a framework, with posts, provided with costly coverings. The Romans also had beds of great richness and magnificence, of two kinds—the *lectus tricliniaris*, or couch, for reclining upon when at their meals, and the *lectus cubicularis*, an upholstered and framed bed, similar to that of the Greeks, placed in chambers for sleeping on during the night. And to prevent dust falling upon the face the Romans are believed to have been the first to provide canopies over their beds and subsequently rich hangings or curtains; a bad custom, followed more or less in the progress of civilization among all peoples.

The English four-posted bedstead is a gigantic piece of furniture that was introduced by the Romans, still retained and aspired to by some people as the acme of elegance and comfort, in America as well as England. But in recent years, since people have learned to have a better appreciation of the benefits of light and air, and to recognize the liability of bed canopies and hangings to become tainted by the adhesion and putrefaction of organic matter exhaled from the lungs—proportionally as people have acquired knowledge of these things—canopied bedsteads and bed curtains are rapidly falling into deserved desuetude.

On the continent of Europe generally beds consist of mattresses stuffed with hair or wool, and less frequently with feathers, resting upon open couches or bedsteads, suitable in width for one person only. Some are still surrounded by curtains hanging from the ceiling, but intelligent travellers are habitually inculcating such practical lessons in overcoming these obstacles to wholesome sleep that they are gradually falling into the wake of the historical canopies. In France

bed-curtains are less frequently seen, and there, as in the United States, the folding trestle-frame with canvas, and a movable head-board to retain the pillow, is often met with. And excepting that it is frequently used in hotels for overcrowding, it is a great improvement on the old-fashioned standing bedstead held together by mortises, cords and slats, with recesses for vermin. But fortunately this, like the old canopied bedstead, is in process of being replaced by the ornate iron and the still more elegant brass bedsteads with tight joints, wholly devoid of recesses for vermin, and so smoothly finished as to be easily kept free from dust. For the same reason, the polished-wire mattress is the best of all under-beds for standing bedsteads; and, covered with woolen blankets only, the best of all beds for hospitals, barracks and tenement-houses.

The folding-bed, however convenient in the economization of space, is altogether inconsistent with healthful conditions, besides being dangerous, particularly to children, for domestic use, from its liability to close up upon them.

The folding-beds of the railway cars comprise the same unwholesome conditions as the domestic folding-bed, intensified by the curtains—all folded and packed while still warm with the accumulated exhalations from the lungs and skin day after day without aeration.

Of the material of stuffed beds, it will suffice to state that, no matter what its nature, animal or vegetable, it should be thoroughly cleansed and sterilized by heat, at a temperature of about 150° F., for at least two hours shortly before putting it into the ticks. A higher temperature impairs the resiliency of the material, if of animal matter—wool, hair, or feathers; and renders it brittle, if of vegetable—moss, straw, or grass; cotton will stand a higher temperature without injury, but with no benefit. To keep a bed wholesome it seems scarcely necessary to state that frequent aeration is an essential condition, even though it be a mere plank.

Whenever upholstered beds have been occupied by persons afflicted with infectious diseases, they should be subjected anew to cleansing and sterilization, or burned up. Bed-clothing should be subjected to like conditions.

The first necessity of human life is *air*, and the first act of

living existence is to breathe it; yet it is surprising to think how many persons there are who seem to take no further interest in the air, or to have no other knowledge of its properties and uses, than that of breathing it.

The air chiefly consists of a mixture of two gases, oxygen and nitrogen, in the proportion of one volume of the former to four volumes of the latter. But besides these two essential constituents, atmospheric air always contains more or less of carbonic acid, generally from three to five parts in every ten thousand; and watery vapor, in variable quantity with the altitude and temperature of the place, seldom more than one sixtieth or less than one two hundredth of the bulk; insomuch that the words air and atmosphere are used synonymously.

But the air is the pathway as well as the dependence of organic nature. By and through it all organic substances are ultimately returned to their original elements. Hence everything susceptible of a gaseous form may be found occasionally in the air, and every analysis of atmospheric air shows, besides the varying proportions of carbonic acid and watery vapor, the presence of ammonia—the common result of putrefaction. And it should be borne in mind that the elements of the atmosphere and all other gaseous substances existing in it are alike subject to the law of gaseous diffusion, prone to interpenetrate and diffuse themselves through each other.

Moreover, besides the gases named, common to the atmosphere, sulphuretted hydrogen, carburetted hydrogen, sulphurous acid, chlorine, carbonic oxide and other gaseous emanations, from both organic and inorganic sources, of a more or less dangerous character, are also frequently found in it; and also suspended matter of various kinds, including many living organisms and particles of putrescible substances.

The healthfulness or otherwise of the air of any place depends upon the nature of the impurities contained in it, and the greater or less degree in which they are present.

Confined air that has been breathed speedily becomes like stagnant water, full of self-multiplying poison, deadly to human beings. Its virulence and the rapidity of its action when breathed over again and again have been demonstrated by many fatal examples, from which a few are here cited, that

should serve to show its danger even under the ordinary circumstances which it is the purpose of this paper to suggest.

Horace Walpole records that in 1742 a set of jolly Dogberries, virtuous in their cups, resolved that every woman out after dark ought to be locked up in the round-house. They captured twenty-six unfortunates, and shut them in with doors and windows fastened. They are said to have "exhausted their breath in screaming." One poor girl said she was worth eighteenpence, and cried that she would gladly give it for a cup of water. But Dogberry was deaf. In the morning four were brought out dead, two dying, and twelve in a dangerous condition.

In 1750 forty persons perished from putrid fever caused by breathing the foul air that issued from the prisoners' dock of the Old Bailey Prison. Of this number four were judges, and the rest officers, barristers, and jurymen. A remarkable feature of this incident was that the victims "sat in the best-ventilated part of the room," it is recorded, right in *the current of the foul air as it was making its exit from the room.*

In the year 1756 the half-civilized nabob of Calcutta confined for one night one hundred and forty-six individuals in a cell known as the "Black Hole of Calcutta," 18 feet long by 14 feet wide, with two small windows. The following morning one hundred and twenty-three corpses were taken out, and twenty-three beings who could scarcely be said to be alive.

In 1848 two hundred deck passengers of the steamer *Londonderry*, on her passage by way of Liverpool to America, were ordered below by the captain, on account of stormy weather, into a hold which was 18 feet long by 11 feet wide and 7 feet high. The hatches were battened down, and when they were opened the next morning there were seventy-two corpses, and several of the remainder were dying.

In 1858 a "distressed American seaman," late second mate of the ship *Waverly*, of Boston, entered a complaint at the United States Consul's office at Seville, for protection from punishment for aiding in confining over four hundred coolies below decks for *twelve* hours, during which time two hundred and seventy died. This mate, a chief actor in such wholesale murder, complained of "hard treatment" because he had

been sentenced to jail four years for the offence, and because the Consul would not intercede to prevent it!

The deaths in all these cases were caused by the repeated respiration of the same air, with its constantly accumulating load of carbonic acid and other poisons exhaled from the lungs and skin, which exposure to the free atmosphere would have wholly dissipated and destroyed.

The process of breathing takes air into the lungs and expels it in a deteriorated condition, because the air is thereby deprived of its oxygen, which is replaced by carbonic acid, a large amount of moisture, and much effete animal matter.

Oxygen, the vitalizing element of the air, is the first element of our bodily tissues, and breathing it affords three quarters of the nourishment of our bodies; and the other quarter, which we obtain in the form of solid and liquid aliment, is also in great part composed of oxygen.

The average amount of oxygen required and consumed by a healthy adult is half a cubic inch every respiration, which in a day amounts to upward of twenty-five cubic feet. And as oxygen constitutes but one fifth of the volume of the air, a single person renders not less than one hundred and twenty-five cubic feet of air unfit for respiration every twenty-four hours, by the abstraction of oxygen alone. Meanwhile, there is exhaled by the lungs about fifteen cubic feet of carbonic acid, thirty ounces of watery vapor, and an indefinite amount of putrescible organic matter, variously estimated at from ten grains to half an ounce, depending upon the manner of life and state of health of the individual. The whole quantity of air actually respired in twenty-four hours by a healthy adult is about 400 cubic feet. This contains, when passed through the lungs *once* only, about five and a half per cent of carbonic acid, or *more than one hundred times as much as it did when it entered them.*

The usual symptoms of carbonic acid poisoning are irritation of the throat, headache, giddiness, singing in the ears, drowsiness, gradual loss of muscular power, irregular action of the heart, hurried respiration and sometimes vomiting and convulsions, and finally, as these symptoms dissappear, coma and death.

Carbonic oxide, which is commonly present in some degree

with an excess of carbonic acid, combines, as oxygen does, with the red blood corpuscles, but with them it forms a new and usually fatal compound, which changes the course of nutrition so definitely that the organs of the body form new products. Thus it has been discovered that if carbonic oxide be inhaled, even in minute quantity, for a short time, grape sugar is made in the body in so large a quantity that diabetes is speedily set up, which is well known to be a very fatal disease.

The emanations from the skin also greatly add to the impurities of the atmosphere, particularly in bedrooms.

The human skin is provided with an exquisite drainage system of infinitesimal tubes, commonly called *pores*, about three thousand to each square inch of surface. From these tubes there is constantly issuing moisture, which is known as insensible perspiration ; but occasionally, under exercise or high temperature, it becomes so abundant that it condenses into drops of sweat. The purpose of this exhalation is to regulate the temperature of the body by evaporation from the surface, and to facilitate the removal of the scarf skin. The scales of which the scarf skin is composed are in constant process of renewal by the healthy skin beneath. The process is most readily observed on the scalp, particularly of infants, when cleanliness is neglected, where the scales are liable to be retained by the hair, and are known as " dandruff." The derivation of this name, by the way, should be impressed upon the memory: *Tan drof*, from two Anglo-Saxon words which signify *itch* and *dirt*.

The scarf skin is particularly abundant after fevers, and especially dangerous after those of an exanthematous character —small-pox, measles, scarlet-fever, and the like.

The daily quantity of perspiration, at moderate temperature, has been computed at three pounds ; but, as before mentioned, it is subject to great increase by exercise and warmth ; and, besides the scarf skin with which the perspiration is always more or less loaded, it contains other putrescible and offensive matter, similar to that which is exhaled from the lungs.

The offensive effluvium which pervades close bedrooms and the beds and clothing of those who occupy them is due to the

accumulation of such impurities as those above described, exhaled from the lungs and skin. They not only adhere to the person, but to all the surroundings. They penetrate and cleave to the beds and bedclothes and wearing apparel; stick to the walls and furniture; in short, they thus create a *nidus*, which is not only offensive to the smell, but perpetually lessening the vital force and predisposing to blood poisoning of all who habitually expose themselves to it; a veritable hotbed for the planting and propagation of specific diseases, and the most fruitful of all sources of rickets, scrofula, consumption, and other constitutional predispositions, often falsely ascribed to heredity.

Infants may be born in the soundest possible state of health, but a single hour's exposure to a close atmosphere—one that has already been breathed and additionally vitiated by the products of artificial light—will so effectually poison its blood and brain that *trismus nascentium* will probably seal its fate in a few hours; or, if this be escaped, infantile convulsions or other disease allied thereto will erelong fill the death certificate with secondary cause——(?), so blind are even medical practitioners as well as mothers and nurses to the fatal effects of close bedrooms, by which an inherent tendency to infirmities is created which indeed has no bounds.

Intemperance, for example, is undoubtedly the most prevalent of vices, and the pathway to much crime. But how much of it is due to stimulants taken, in the first place, to counteract the depression consequent upon the exclusion of oxygen from bedrooms, is a question well worthy the attention of all who would go to the root of the evil. Among the poor and overcrowded tenement populace, misery has long been known to be an incentive to the use of alcoholic sitmulants; but the misery induced by the vitiated atmosphere of bedrooms pervades society generally, while to lying-in women in particular it is not only the most inductive of all causes to childbed-fever, but to both mother and nurse a powerful incentive to alcoholic stimulants for relief, which all good observers know often leads to intemperance.

With regard to consumption, particularly, it is among the greatest of misfortunes to the people that the numerous suggestions for the possible cure or mitigation of this disease

and prolonging the miserable lives of those who are so unfortunate as to contract it, have served to divert attention from close bedrooms, which are of all sources its most prolific breeding places, and from fresh air and sunshine, its most potent preventives.

The danger of rolling up bedding instead of opening it out and airing it in the morning, and of packing up dirty linen in drawers and close corners, instead of keeping it in baskets, is shown by the following quotation from a paper by Douglas Galton, C.B., D.C.L., etc. : " Dr. Beddoes mentions that one man of the Horse Artillery at Woolwich was admitted into the hospital with a suspicious fever ; next day another. This excited inquiry. It was found that they came from two different barrack rooms. These were followed by other men, in all amounting to eight, three of whom came from a separate room, the rest from the same rooms. All the rooms whence the infected men came were found to have entirely different bedding from the rest of the barracks. The Horse Artillery being a corps in constant readiness for service, and whose appointments were always complete, had, for convenience of carriage, hammock bedding. The hammocks were rolled up tightly every morning the moment the men rose, and they were unloosed when they went into them at night. At this time there had been so much and so constant rain that this bedding had not been aired or opened a single day for two months. The hammocks with their bedding were examined, and the moment they were opened a very peculiar, nauseating smell was perceptible. Immediate steps were taken to alter the bedding, and no further mischief took place."*

This incident is no more suggestive to soldiers and sailors than it is to travellers sleeping in railway coaches. They should require an absolute change of bed and bedclothes every night, and the car companies should be required to submit that which has been used one night to thorough aeration during the day, instead of being boxed up, as such beds and bedclothes usually are.

The longer the period of time during which such conditions are tolerated, the greater the predisposing receptivity of those

* " Our Homes and How to Make them Healthy," p. 499.

who endure them to all diseases, and the more dangerous they are to others who may encounter them. Indeed, it seems to be a law of nature, applicable to all living beings, that their confinement amid the emanations from their bodies is fatal to them.

The depressed state of the organism of persons living under such conditions greatly increases their liability to and the danger of all diseases. The vicissitudes of weather which persons living under healthful conditions may encounter with impunity are to the depraved constitutions of those who habituate themselves to the foul air of close bedrooms special sources of danger; and it is among such that pneumonia, peritonitis, and other acute and fatal diseases mostly prevail.

The bane of those who tolerate confined air is a *draught*. It is chiefly dangerous, like exposure to the ordinary vicissitudes of weather, to those who have had their power of resistance impaired by confinement, and particularly to the occupants of small bedrooms, because such persons, on account of the otherwise *still* air which they harbinger, are much more sensitive to air currents. And herein lies one of the most troublesome problems the medical practitioner is called upon to solve, how to effectually warm and ventilate a small bedroom, particularly of the "lying-in," without draught. My suggestion is, do it after the manner of the accomplished cook's reply to the question, "How is the best way to cook an oyster?" "Eat 'im raw."

Small bedrooms—that is to say, those which afford less than 1200 cubic feet to the occupant, particularly if used as lying-in chambers—should wholly rely upon the bed and clothing for warmth, unless, perhaps, heat can be admitted from an adjoining room. Ventilation without draught, under such circumstances, is no more difficult than for larger rooms. Rooms of less than 1200 cubic feet capacity cannot be effectually warmed and ventilated in cold weather without thorough air flushing; and this can rarely be effected while they are occupied. Hence such rooms should be occupied by healthy persons as sleeping rooms only; never occupied as lying-in rooms or used by other invalids who cannot vacate them daily for thorough aeration.

Doubtless disease is often the result of draught—that is to

say, of the passage of a current of cold air sharply across or against a portion of the body that is exposed to it; but the danger of this is greatly enhanced by too close confinement. Persons who habitually expose themselves to an abundance of fresh air rarely suffer from such causes. Some there are, however, on account of apparently inexplicable reasons, who are supersensitive to such conditions. But these, above all other persons, find their best protection in habituating themselves to a plenary supply of fresh air under all circumstances; by woollen clothing and by especially avoiding small bedrooms and all such conditions as are engendered by them.

Specially sensitive persons frequently suffer from the radiation of the heat from their bodies by too close proximity to windows, though these be perfectly tight, by resting their arms on marble-top tables, or by sitting or lying too close to the wall. The abstraction of heat from the exposed surface of the body by these means is similar to draught, and liable to the same results.

People generally rely altogether too much upon the house to exclude cold air, instead of warm clothing, by which they exclude fresh air. By habituating themselves to close rooms and impure air they create and increase their liability to the diseases which they exert themselves in the wrong direction to avoid. No one can be thoroughly well and maintain effectual resistance to disease without an abundance of fresh air and sunshine; for these means there is no substitute.

Barbarous and nomadic people, who accustom themselves to sleeping in the open air, or tents which admit of plenary ventilation, are remarkable for their exemption from scrofulous diseases and consumption. Indeed, it is proverbial that when the Arab forsook his tent and took to the house, he took consumption.

An incident is recorded of the American Indians that not many years ago an agent in the Northwest built a number of farm-houses for those in his jurisdiction, which he persuaded some of the Indians to occupy; but great was his astonishment on returning from a protracted absence to find the houses in use as storehouses for the farming implements, and the Indians again in their well-aerated wigwams. On inquiry they informed him that all who slept in the houses were

made sick, and that some of them had spat blood ; on moving out they had regained their health, and wanted nothing more to do with the houses.

And as another illustration of the influence of fresh air and how well it compensates for other conditions, the writer remembers reading the report of an army surgeon some years ago on the treatment and viability of the Winnebago Indians' infants, whose mothers bind them, soon after birth, to hard boards and carry them on their backs, with the result of flattening their heads. Notwithstanding, by a computation made by the writer at that time (about thirty years ago), the viability of the Winnebago children was found to be superior to that of the children of the New York tenement populace. But in illustration of the progress made in practical sanitation in New York since that time by the improvements made in the structure of tenement-houses, requiring ventilation and sanitary surveillance, the viability of the children occupying them at the present time is greater than that of the non-tenement-house population, who are privileged to exclude as much fresh air from their bedrooms as they please And there is good reason to believe that the same is true with regard to the gamins, the houseless population who sleep in boxes and under sheltered corners ; they enjoy better health than those who occupy close bedrooms.

Bedrooms should always be constructed or chosen with reference to the probability of their becoming sick rooms. Hence the size of the room, the size and place of the windows and doors with reference to light and air should be arranged accordingly. In houses of the villa type it is almost impossible to avoid placing the bed either facing the window or between it and the door ; in which case the former alternative should be preferred, because the inconvenience can be modified by shades or blinds. A projecting window is always a useful addition to a bedroom, providing room for the dressing-table and increasing the amount of floor space. Recesses or closets should always, if possible, be constructed to take the place of wardrobes, but never in dark corners ; and the ventilation of such wardrobes and closets should be accomplished by ornamental borings in the panels of the doors, by transoms, or by doors shorter by two inches at the top and bottom

the infant is more than twice as great in its degree of exposure as that of an adult, and its feebleness for several months is such as to require sleep for almost the whole of its time when not nursing. Its bed should be soft and the covering light and warm. It should at the first, and for at least a week after birth, be placed upon its side, well over on its stomach, with its mouth and nose free, lest it strangle with the trickling of the saliva into the windpipe. After a time, when it has gained sufficient strength and knowledge to use its limbs, for increased comfort, it may be placed upon its back, or at its own inclination. But in placing it in bed with its mother, which is generally best, care should always be taken to so place it that it is not likely to work its way down and get its face under the bedclothes, where it would inhale the effluvium from the body of its mother.

Cradles and cribs are not only of great convenience, due care being observed with regard to the softness and warmth of the bed and covering, but advantageous for so placing the occupant as to secure the best access to fresh air and warmth, without overheating, which should be guarded against by light wool covering.

Baby wagons require at least the same care with regard to bed and covering, and, besides, special care in cold weather, to prevent the abstraction of heat from the body by cold pavements. To prevent this it is well to have an extra under bed; and, for the same reason, those baby wagons are best which have high wheels.

Darkness in bedrooms is the common concomitant of dirt; and though frequently induced for ostensibly good reasons, there is no gainsaying the fact that it generally serves to conceal worse conditions than those which it portends to prevent. If a room is generally dark it is scarcely less generally dirty; and if it be but moderately well lighted on the whole, and yet has corners and recesses into which the light does not penetrate, those corners and recesses will usually be dirty corners and recesses. Fluff and dirt, comprising in part particles of organic matter from the lungs and skin, collect in them; and the scope of the broom and dust-brush of the ordinary housemaid is too well known to describe a curve commensurate with the light, to expect anything more than an aggravation of the

danger of such dirt, by merely stirring it up and increasing its liability to be inhaled or to settle in the food and drink. That household dirt generally, and of dark bedrooms in particular, is a frequent cause of such common illnesses as catarrh, sore throat, inflamed eyes and bronchitis, and sometimes of graver diseases, is beyond question by any physician who comprehends the causes of the diseases he is called upon to treat as the most important step toward their cure and subsequent prevention.

The renowned Florence Nightingale well says, with regard to hospital wards: "Window blinds can always moderate the light of a light ward, but the gloom of a dark ward is irremediable. The escape of heat from large windows may be diminished by double glass; for while we can generate warmth, we cannot generate daylight or the purifying and curative effects of the sun's rays." These remarks are no less applicable to other rooms than to hospital wards.

Sunlight is, indeed, the right arm of oxygen. There ought not to be a dark room in any human habitation. To have too much sunlight for health is not possible. Its extraordinary intensity under exceptional circumstances can always be moderated as occasion may require, but its plenary supply should always be provided for. Of artificial light generally, it may be said that in all its forms, except that of electricity, inasmuch as it is produced by the combustion of some compound of hydrogen and carbon, previously volatilized or brought into a gaseous condition, it is more or less injurious to the atmosphere, by consuming the oxygen and emitting mephitic gases.

Candle light varies in its effects with the hardness of the candles; the hardest are the best. Tallow candles, on account of their softness, are never completely burned, consequently they throw out a good deal of soot and other impurities besides carbonic acid, while they consume as much oxygen as the harder ones. The vitiation of the atmosphere by one such candle light is about equal to that caused by one person. The harder varieties, those made of paraffine and sperm, are about half as injurious as those made of tallow; an individual in a room with two such lights requires twice as much fresh air as would be required without them. The oils used for light-

ing greatly vary in their effects upon the atmosphere, according to the greater or less completeness of the combustion. As a rule they are about twice as detrimental to the atmosphere of a room as hard candles, one ordinary lamp light under full pressure being equal in its deleterious effect upon the atmosphere to one person ; with the wick turned down, the combustion is less complete and the injury to the atmosphere greater. Coal gas, besides consuming oxygen much more rapidly and giving off much more carbonic acid than candles or oil, emits carbonic oxide, sulphuretted and carburetted hydrogen—substances extremely injurious to the atmosphere. Every cubic foot of gas burned will consume the oxygen of about eight cubic feet of air. A two-foot burner will consume at least two cubic feet of oxygen in an hour, and thus destroy the oxygen of sixteen cubic feet of air ; that is to say, will vitiate as much air as four adults would in the same length of time ; so that a person sitting in a room with a gas burner that only consumes two cubic feet of gas hourly requires at least five times as much change of air as would be necessary without the gaslight. Moreover, turned-down gaslights are like turned-down lamp-wicks, still more injurious, because the escape of mephitic gases is thereby increased. Water gas is even more detrimental to the atmosphere than coal gas, because it more generally gives off carbonic oxide.

Night lights of turned-down gas are abominable, on account of their increased liability to contaminate the air. Far better is it always to have a hard candle and match at hand.

Electric light is almost wholly free from the vitiating influence of all other means of artificial lighting. Although given off by matter in a high state of incandescence, the heat which attends it is so much less than that of the common hydrogen flame in which carbon is burned that the vitiation of the atmosphere from this cause, when compared with the amount of light produced, scarcely amounts to anything ; and indeed it may be so arranged as to consume no oxygen whatever, and not to yield anything that is noxious or destructive to either organic or inorganic substances. It is only objectionable when it is so near that its directness and brilliancy become distressing to the eyes. But this may be prevented by multiple reflectors, so arranged that the light will be modified before it

reaches the eyes, in the same manner as the sunlight is, by the intervening objects upon which it falls, and by which it is not only deprived of some of its heat waves, but also of some of its vibrations.

The most important properties of the atmosphere are its universality, its power of self-purification, and its perfect elasticity and diffusibility. It floats around the earth in perpetual motion, and according to the quickness with which it moves, it produces gentle breezes, swift winds, or resistless tornadoes. It penetrates and diffuses itself into and throughout everything. The most compact stone, brick, and mortar, of which our houses are built, are more or less all penetrated by the air. Its pressure upon the earth at the level of the sea is equal to fifteen pounds on every square inch of surface, which it penetrates to a great depth; and all water of natural origin contains it in solution. The body of a man of average stature, whose superficial surface is about fifteen square feet, sustains an air pressure of 32,400 pounds. This pressure is not felt because the cavities and all the tissues and fluids of the body are also filled with it, and by this means the external pressure is equalized and rendered imperceptible. The air is no less yielding to everything else than sensitive to its own integral motions. If anything advances, the air moves off before it to make room; and if anything recedes, the air follows to support it. If anything is heated above its wont, the air ascends with the excessive heat; and if anything is cooled overmuch, the air closes in upon it to give warmth and protection. No matter how great or how small the object, how long or how short the distance, the air is responsive to the very smallest degree of action and equally adaptive to the most powerful.

Oxygen is the active effective agent that cooks the food, burns up the waste, purifies the blood, and vitalizes the tissues. In a pure state, however, it will not sustain life but a short time, owing to its excessive activity. It requires dilution, and this seems to be the purpose of nitrogen, which cannot sustain life at all, and alone is deadly from its negative qualities.

Ozone is oxygen in another and more intensified form, always present in the free atmosphere to some extent, most abundant in the ocean atmosphere and in that of pine forests.

Oxygen in this form attacks and disposes of the emanations from the lungs and skin and putrescible substances generally, and so prevents them from contaminating the atmosphere. *Ozone is never found in close bedrooms*, however, or in the wards of crowded hospitals, because any that gets into such places with the fresh air from without is immediately used up by the foul organic matters present in such air.

Carbonic acid pure is not respirable. If an attempt be made to inhale it, the glottis closes and prevents it from entering the lungs. When diluted with twice as much or more of air, it ceases to produce that effect upon the glottis, and is permitted to enter the lungs and the blood, when it acts as a narcotic poison upon the brain. It is not possible to state how large a proportion of this gas may be present in the air without danger; it doubtless differs in different individuals. But by experiments on animals it has been shown that air containing five per cent of carbonic acid is fatal in about thirty minutes. And the terrible results of confining persons in closed spaces from which fresh air was excluded, cited on preceding pages, abundantly demonstrate its deadliness to human beings.

The excess of carbonic acid exhaled by the process of respiration of man and animals is absorbed in the free atmosphere by plants. Whereas animals take oxygen out of the air and put carbonic acid into it, green vegetation of every kind, under the influence of sunlight, does the reverse—it absorbs the carbonic acid and exhales oxygen.

The flowers of plants, however, and fruits while ripening are like animals in this respect, they absorb oxygen. Hence while bedrooms and hospital wards may be rendered fragrant and given a more cheerful aspect by green flowerless plants, it is better never to add any that are in bloom or fruitage.

Fresh air is the great disinfecting agent in nature, tending constantly to dilute and remove all pernicious emanations from whatever source, and in proportion as we confine or restrain it do we foster and propagate disease.

A. N. BELL.

JAMAICA FOR HEALTH AND PLEASURE.

By WOLFRED NELSON, C.M., M.D., New York.

JAMAICA, of the British West Indies, offers an ideal winter resort, be it for health or pleasure. Its season is from November to March.

Winter tourists from the United States and Canada generally are of two classes—the tourist pure and simple, seeking change of scene, and the health seeker, who gladly leaves a trying winter climate for tropical sunshine. The health seekers are a constantly increasing class. Yearly several thousands leave the port of New York for one or other of the West Indian islands.

The sole island in the West Indies possessing three climates is Jamaica. I refer to an English-speaking island. Apart from her climates, two of which meet the requirements of those seeking health and rest, she has mineral springs whose fame as curative agents in gout, rheumatic and other cases date back nearly a century. Of late years the virtue of the Jamaican spas has been extolled by the late Hon. Dr. Phillippo, Dr. M. Stern, Panama, and Dr. Thomas L. Stedman, New York.

The travellers, be they for pleasure or health, will find a wealth of scenery in any of the three climates offered by the "Isle of Streams." They can live at the coast level, on the hills, or at intermediate levels; at coast level in the city of Kingston; at an intermediate level at Constant Springs, seven miles from Kingston, in the foot-hills. If a hill climate is in order, at the Moneague. Travellers given to exploring mountains will find a handsome variety and to spare in the huge chain of Blue Mountains, whose highest peaks are 8000 feet above sea level.

The tourist, properly so called, requires but little advice. In the tropics they should make haste slowly, spirituous liquors, ripe fruits, if used, should be with extreme moderation. They should avoid the mid-day sun. By adapting

their methods of living to that of the locality—measurably, of course—they will be within the lines of safety.

In the coast or purely tropical climate the health seeker will find equable warmth. By this I mean the whole Jamaican littoral. In Kingston the Myrtle Bank is the hotel. Board may be found in pensions.

Seven miles out of Kingston, on table-land 700 feet above sea level, is a large and fine hotel, specially built for winter tourists of both classes. It is named the Constant Spring Hotel, the building taking its name from the estate on which it has been erected. The hotel can be reached from Kingston—the capital—by train or carriage. Once domiciled at the hotel, many pleasant trips may be made by carriage or on horseback in a variety of directions. Equally pleasing and equally instructive, the island of Jamaica offers novelties without end to the stranger to tropical life. The amount of profit and pleasure derivable from them will depend wholly on the visitor's natural trend. It can be made rest, physical and mental, amid classic scenery, or as much exercise as may be deemed advisable.

The tourist class can make a trip around the island by steamer, visiting some twenty ports, and be back in Kingston in three days, or they can go half way around the island, leaving the steamer at any port and return to Kingston by carriage, or if time and inclination permit, engage a carriage and make a trip around the island. Jamaica has the best roads of any island in the West Indies. They are macadamized, and kept in perfect order. Over 1000 miles have been added to them since Sir Henry Arthur Blake's advent as governor.

The hotels known to the writer, and largely the property of the Government of the island, are the Myrtle Bank, Kingston, a large and centrally situated building; rooms well lighted and ventilated. Next, the Constant Springs Hotel, already referred to as being seven miles from Kingston. It is 700 feet above sea level. From its extensive all-around galleries there is a fine view of the city of Kingston, and its old-time and historic harbor. The third hotel is that at Moneague. From Kingston it is a trip by rail and carriage. It may be called a hill resort, and properly so, it being the equivalent of the hill resorts in the British East Indies. The trip by rail is most

enjoyable, amid rich and novel scenery. The carriage trip across Mount Diabolo offers a view of some of the grandest and most effective of tropical scenery.

In writing a general article on a theme so extensive, no physician, I think, will attempt to lay down any "hard-and-fast rules," but will content himself with such suggestions as may be germane to the theme.

In a tropical island individual likings and a natural trend combined with common sense in the traveller or health seeker must dominate.

The tourist in full health can please himself or herself, and gradually adjust themselves to their environments. Haste and rush, both synonymous for "hustle," are very bad form in a warm climate, quite apart from their being unnecessary. Leave all rush methods and the brain-muddling Sunday newspaper where they belong. They are indigenous here away, and to transplant them will be cruelty to animals.

I assume that the health seeker visits Jamaica under the advice of his or her physician. As the island has two climates accessible at this writing to the invalid class—nearly all classes may be sent—still no health seeker should visit any tropical island unless advised to do so. Once in Jamaica, thoroughly qualified physicians will be found.

Having selected a temporary residence in any part of the island, the health seeker, if wise, should determine on what amount of exercise and of repose will suit him—in short, meet the indications of his case. Having fixed on a rule, it should be lived up to. I am dealing with the earnest seeker after health. To rest mind and body must be their only aim. To all of this class, as an old traveller and practitioner in the tropics, I suggest the following: "Early to bed and early to rise," an old-time bit of wisdom, whose value to-day is as good as in the past.

Be up early—quite early; begin the day with a tepid bath or sponge bath—if accustomed to it; then a cup of tea or coffee with a roll; a walk before a light breakfast. Let the invariable rule be exercise within fatigue. Lunch at one; likewise remember that spirits, malt, and very juicy, fully matured fruits are best left alone.

The middle of the day at coast level is warm, and new-

comers should avoid the noonday sun by keeping under cover ; later when the ocean breezes blow inland, more exercise will be in order. Dinner at six or seven. Make it an easily digested, nutritious meal. Retire early, say at nine o'clock. We must bear in mind that the object sought is rest, mental and physical—both within the grasp of the intelligent health seeker in sunny Jamaica. By early rising the very best part of a tropical day may be enjoyed. This early rising will require earlier retiring ; it will mean a restful night to body and brain ; soon, very soon the early retiring and rising will become most enjoyable. Then more exercise will be in order, meaning greater tissue change, greater repair, greater appetite, and sound, restful sleep, the whole resulting in increased health and strength. Let common sense be the rule. We must remember in this, as in other things, "common sense is genius in its working attire."

From Jamaica trips may be made by steamer to the other islands, or tourists may "go down the islands" and reach Jamaica from Barbadoes. No end of variety may be thrown into a winter in the West Indies. The tourist or health seeker who visits them once will long to return.

The Government of Jamaica is doing everything that money and foresight can devise to make Jamaica the largest and most attractive of the British West Indies—the winter island *par excellence* for Americans and Canadians.

THE SALTON SEA.—The climatic changes which will result from the lake so recently formed in the deserts of Southern California have been the subject of much popular discussion, and correspondents have given full play to a lively imagination in their surmises regarding the changes which are imminent. It is a fact that on the coast adjacent to this lake there has been an unusual, and, according to the oldest inhabitant, an unprecedented rainfall ; but whether this is merely a coincidence or the direct result is not easy to determine. Our knowledge of summer storms, and ability to predict them, is not an exact science. It is well known that the showers

occasionally falling in summer are not connected with general cyclonic disturbances, but are due rather to local causes. Lieutenant Finley seems to attribute but little influence to the lake so recently formed, and regards the heavy rainfall in the country adjacent as mere coincidences, nor does he believe that there will be any climatic change, even should there be formed a permanent inland sea, basing his opinon on the fact that in many portions of California, Nevada, and Oregon, in regions equally arid, there are lakes of large extent, and that they do not materially modify or differ from the climates prevailing elsewhere. When it is remembered, however, that this lake covers some 1700 square miles, and that at a moderate calculation from each square mile some fifty millions of inches of water are daily absorbed, there must be an increase of aqueous vapor in the surrounding air, and if the circumstances were such as to be favorable to condensation, a greater precipitation could easily result. It is claimed that the topographical features of the country strongly favor such condensation, there being in close proximity an elevated mountain chain, beyond which the cool breezes from the ocean renders the air along the western slope decidedly colder. It is in these monntains that the recent cloudbursts have occurred. There has been a series of storms, and so far, no more plausible explanation of such precipitation has been offered. It would seem that this region would be a far better field for the experiments now being conducted by the Government in its effort to produce artificial precipitation than the places so far selected. Granting that the hypothesis on which these experiments are being conducted is true, in order for them to succeed there should be a large amount of aqueous vapor in the air. Certainly the conditions surrounding Salton Lake in this respect would be extremely favorable for such experimentation.—*Occidental Medical Times.*

COLDS ARE NOW IN SEASON.—*They should always be treated with respectful consideration,* for although ninety-nine times out of a hundred an ordinary cold will get well anyhow, there is no telling when the neglected one will avail itself of the advantage of the slight and kill you !

SMOKE AND FUME ANNIHILATION.

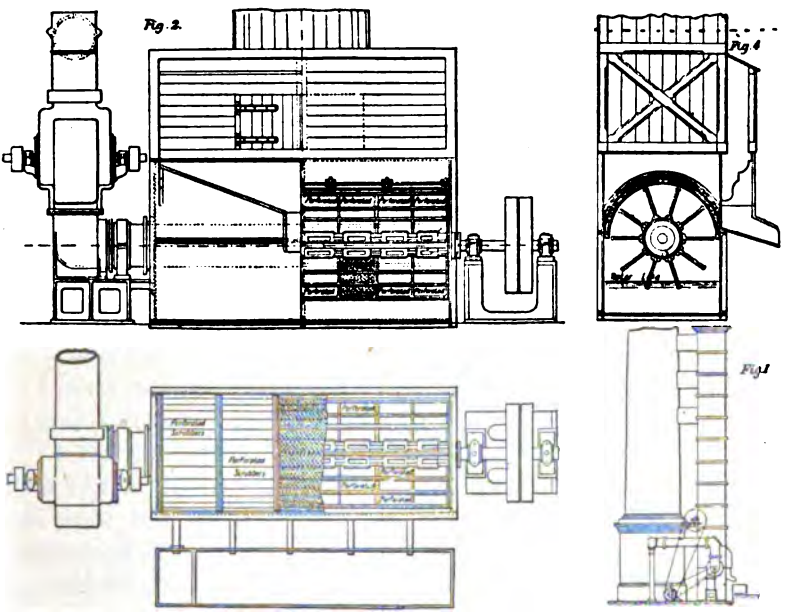
A RECENT number of *Engineering* illustrates and describes Elliott's smoke and fumes annihilator, which has been at work at the Birmingham Mint for several months. The principle of the invention, which was experimentally tried in London two years ago, is to wash the smoke thoroughly and to utilize the carbon precipitated in the water as well as the fluid drained off.

Figure 1 shows the general arrangement of the installation. The stack, which is 100 feet high from the ground level and 6 feet 6 inches in diameter, takes the smoke from three Lancashire boilers, one 30 feet by 8 feet, and two 28 feet by 7 feet 6 inches, each with two flues, and a three-flue boiler 22 feet by 6 feet. In addition there is discharged into the stack the smoke from six large mufflers for hot rolling and annealing.

Formerly the Birmingham Mint was occasionally fined for allowing dense smoke to be emitted from the stack, and this, in large measure, induced the directorate to try Elliott's invention after seeing it at work at his establishment at Newbury, Berks. The fumes, instead of being allowed to pass up the chimney, are drawn off by fans at a height of about 12 feet from the ground. Fitted into the shaft or stack is a cone with the large end downwards, reducing the diameter at top to 3 feet 6 inches. An 18-inch pipe pierces the shaft, but it is proposed to substitute a 30-inch pipe for reasons which we shall indicate later. This pipe, shown in Fig. 1, is connected to the induction opening of a fan, the casing of which is shown on the front elevation and half longitudinal section (Fig. 2), as well as on the plan (Fig. 3). This is a 4-vane fan with ordinary flat surfaces, and has been found to work more satisfactorily than many other arrangements. The diameter is 3 feet 6 inches, and it is driven by belting as shown ; it runs at a speed of about 1600 revolutions per minute.

As the function of this fan is to arrest the progress of the smoke up the chimney and drive it into the washing chamber, or annihilator, as it is called, it is necessary that it should work efficiently ; otherwise smoke would find its way up the chimney, and although the stack might under certain condi-

tions be dispensed with there would still be necessary a sufficient induction draft to insure combustion in the boiler. It is desirable that the air pressure given by the fan should be 10 inches according to the water gauge, but at the speed given it is from 8 inches to 9 inches. It is proposed, however, instead of driving the fan from a separate engine, to convey the motive power from the hot rolling-mill engines through a shaft underground for 50 feet. This shaft will run at 100 revolutions per minute. It is hoped by this means to increase the speed of the fan, which, combined with a larger



pipe already referred to, will give greater efficiency. The fan, it may be stated, is cleansed from sooty deposits by jets of water which play upon it and the bearings.

The smoke is forced through a pipe into a revolving barrel fitted with long blades as shown in the end section (Fig. 4). This revolving barrel, which is of cast iron, is about 11 feet long and 16 inches in diameter. It is perforated with holes from $\frac{1}{4}$ inch to $\frac{3}{8}$ inch in diameter, and fixed to it, as shown, is a series of beaters like the blades of an old-time paddle steamer. These blades also are perforated, as indicated in

Figs. 2 and 3. In the cast-iron casing in which this revolving barrel works, there is a quantity of water, as shown on Fig. 4, constantly replenished by a small jet entering from the top. The smoke passes through the pipe into the interior of the revolving barrel, and thence through the holes.

The result of the beating of the water is to insure the precipitation of all the carbon and sulphur in the smoke or fumes. The barrel, driven by belt gearing, makes from 180 to 200 revolutions per minute. Over the chamber are semicircular coverings or gratings, shown in section in Figs. 2 and 4, and on plan in Fig. 3. These are simply to prevent the water or carbon finding its way to the upper part of the shaft. The hot vapor given off readily passes through the perforations and up the timber trunk shown on Fig. 1, and finds its way into the chimney or stack about 50 feet or 60 feet above ground level.

Opportunity was afforded of ascertaining the effect of the working of this apparatus some weeks ago. The stack was giving forth smoke when the mechanism was started, and in five minutes there was a very perceptible change, while in eight minutes only a grayish white vapor was emitted, and this was easily dissipated. Dr. Heaton, of Charing Cross Hospital, made analysis of the discharged gases, and stated in his report that there was not detected any trace of sulphurous or sulphuric acid, while carbon was also entirely absent.

The residual products collected in the annihilator are utilized for various purposes. The scum passes out from the chamber as shown on Figs. 1 and 2, and into a wooden box shown on Fig. 3. Here it appears as a black and opaque bubbling liquid, the analysis of which by Dr. Heaton is given as follows :

" The liquid was slightly acid. Qualitative analysis showed the presence of copper, iron, sulphates and chlorides, and the absence of zinc and sulphurous acid.

" The liquor contained, in 100 grain measures :

	Grains.
Combined water and volatile matter.....	.646
Ash	.558
	1.204

"Complete analysis gives the following results:

	Parts Per Cent.
Sulphate of iron (green vitriol)	.40
" copper (blue vitriol)	.30
" ammonia	.08
Sulphuric acid (free)	.005
Insoluble organic matter	.022
Volatile organic matter	trace

"It is evident that the important constituents here are the sulphates of iron and copper. The following experiments were made to determine whether any appreciable quantity of tar compounds was present: 1. A portion of the liquid was shaken with ether and a little acid. The ether, when decanted and evaporated gently, yielded a residue too small to be weighed, and which, when tested, was found to contain no trace of carbolic acid. 2. Two other portions of the liquid were treated respectively with acid and with alkali. Each was distilled separately, and the distilled portions extracted with ether as before. Practically no residue was contained in either case, but the distillate from alkali after ethereal treatment developed on the watch glass a slight smell like creolin."

The liquid is drained off through a sieve, and is said to have valuable properties as a disinfectant, for which it is already sold commercially, while the carbon is used for many purposes after it is dried, notably for arc lamps. The plant at the Mint is worked by a 40-horse-power engine and portable boiler, which is fitted with a similar arrangement for smoke prevention, but here the vapor passes off from the annihilator into the air.

DISINFECTION ON LONG ISLAND.—The *Independent* reprints *literatim et punctuatim* the following paragraph from a board-of-health report of a town on Long Island:

"Every person who is confined in a house owing to sickness and contagious diseases, should at all times be thoroughly covered with disinfectants both externally and internally, to insure safety to themselves and others as in my mind a spread of the same is caused by carelessness on the part of people who know it all and cannot be told by persons of experience."

THE UTILIZATION OF GARBAGE.*

By Dr. Bruno Terne.

THE immortal Justus Liebig, the founder of agricultural chemistry, and, indirectly by his teachings, the creator of the industry of artificial fertilizers, combined in himself the qualifications of a most eminent chemist and a far-sighted national economist.

He transformed the chemical doctrines of plant nutrition at once to available figures for the farmer to show him in clear and indubitable sentences the laws of nature which compel him to restore to the soil what he has taken from it in the form of the products of the field.

His classical "Chemical Letters" are a monument he has erected for himself which will endure as long as the conditions of this globe remain the same as they now are. As long as the human race lives, the fundamental laws requiring the restitution to the soil in available form of the constituents of the plants as laid down by Germany's most eminent agricultural chemist will be written in golden letters in the history of all civilized nations.

In centuries to come the classical works of Liebig will be revered as the revelation of science respecting the practice of agriculture.

In his forty-seventh letter, Liebig refers especially to the relation of the consumption of the great cities to the products of our farms. From each hectare of wheatfield, the farmer from the return of an average harvest transports from his farm to the consumers 4000 pounds of grain containing seventy pounds of mineral substances, mainly phosphoric acid and potash.

The refuse of a city of 1,000,000 inhabitants will amount in dried form per annum to 45,000,000 pounds.

The constituents of this powdered material are 10,300,000 pounds of mineral substances, mostly the mineral parts of

* From the *Journal of the Franklin Institute*. A paper read at the meeting of the Chemical Section, held June 20th, 1893.

breadstuffs and meat, which contain no less than 4,580,000 of phosphatic salts.

The removal of this precious material (at the rate above-named) from the fields has been going on for centuries, and only a small portion of it finds its way back to the fields.

It is folly to think that the loss of this material has had no detrimental influence upon the fertility of the soil.

I will quote from the tenth letter of Henry C. Carey, the American statesman and national economist, to the President of the United States. (J. B. Lippincott, Phila., 1858.)

"The national economical question is not how much we can produce but how much is returned to the soil of the products annually.

"Labor used to rob the soil is worse than labor thrown away. In the latter it is a loss to the present generation, in the former poverty for the coming generation."

The same system which Carey condemned, in the above citation, of a large export of material without corresponding restitution of plant food to the soil continues to be practised in the corn belt of the West, while the cotton belt of the South and the entire East have been compelled to yield to the inexorable law of nature, and must now restore food to the impoverished soil to raise their crops.

The zone subservient to artificial nutrification of the soil grows wider and wider from year to year, since the waste of plant food-material grows more serious as our population grows denser.

What Carey so incisively pointed out thirty-five years ago is as true to-day as it was then, but only the stress of absolute necessity or the prospect of financial gain will suffice to alter the system involving the extravagant waste of plant food-material which is now the rule with us.

For the sake of convenience we pollute our rivers and choose rather to suffer the consequences of drinking polluted water than to adopt rational measures to save, for the enrichment of our fields, the products which the law of nature has provided for the very purpose.

Our antipodeans, the much despised Chinese, are much better practical economists than their civilized brethren. In China nothing is allowed to go to waste that is useful to the

soil. The Chinaman's house is without the improved devices of the modern plumber, and his scent for nuisances may not be so highly cultivated as ours, but by his system of the strictest economy he manages to keep up the fertility of his soil to so high a degree, that the vast empire, notwithstanding that it possesses the densest population on the face of the earth, is entirely independent of all other nations, not only for the breadstuffs and other food supplies required for the sustenance of its people, but also for the fertilizing materials needed for its soil.

The Chinese, with the instinct of self-preservation, have been doing for centuries what Liebig and his followers taught the civilized nations of the world in the beginning and middle of the present century.

To-day we have fleets engaged in transporting phosphoretic and nitrogenous materials from continent to continent; the services of the miner and the skill of the chemist are required to supply this food material to our exhausted fields.

The nitrate mines of Chile, the phosphate beds of South Carolina and Florida, of Belgium and Russia, the mountains of apatite rock of Estremadura and the deposits of the same material in Canada, the potash salts of Germany and Hungary, are drawn into the service of agriculture. One of the most gigantic branches of the chemical industry has been built up in order to balance the debit and credit page of the rational farmer in the records of his culture.

But in seeking for remedies that will preserve the fertility of our fields, it is a remarkable fact that a vast amount of waste material which lies right at our feet is not given a thought.

It is true that all the more valuable waste materials, such as bones, tankage, cracklings, cottonseed meal, leather, hoofs, horns, etc., have a stable market. But the poorer and much more abundant materials have been and are now almost entirely neglected.

We will to-night direct our attention to the question of the possibility of utilizing the garbage of our city, which at the present writing is the subject of much discussion.

Until recently the garbage collected in this city has been used mainly as a feeding material for the fattening of pigs in the outskirts. For sanitary reasons, the Board of Health has

banished the piggeries outside the limits of the county of Philadelphia. This is very commendable to free the city of a nuisance, which at the best was a very crude method of disposing of the material, and which by the carelessness of those who make a business of it certainly created a health-endangering nuisance; but the decision of the Board of Health made the disposal of the material very much more difficult than before.

The city of Philadelphia is divided into five districts for the collection of garbage. During the summer months, from June to September, the accumulation of a single district runs up to 100 tons per day, while in the other months of the year the daily output varies, and in the middle of the winter falls to twenty-five tons per day.

A general average for the whole year is about 250 tons per day for the whole city.

This estimate we can safely use for calculation of returns, but not as a basis for the construction of a plant, for which the maximum figures will have to be taken.

For the first district, comprising all that part of the city south from South Street, from river to river, a furnace for the cremation of garbage has been erected, situated on Washington Avenue and Twentieth Street.

Unquestionably cremation is the most complete system for destroying all organic substances, and doubtless to the extreme sanitarian the only method that should be adopted.

But what about the economical results? The daily operation of the furnace requires labor and fuel, the product of a crematory is a small quantity of ashes and worthless at that. Four or five per cent of ashes is all that remains of the garbage when incinerated.

The American Incinerating Company, with headquarters at Washington Avenue and Twentieth Street, has offered its product to the fertilizer trade. I have here a sample of these ashes which were sent to us. Our analysis yielded us:

Total phosphoric acid = 15.32 per cent (= 33.88 per cent phosphate of lime), potash 0.25 per cent, soluble in water.

I was astonished to find so little potash, but the intense heat in the furnace has driven off a part of the alkalies as chloride

vapors, otherwise the analysis should show at least four times as much.

This ash, even with fifteen per cent phosphoric acid, has a very low market value, because natural phosphates in bags, and ground to the finest powder, can be laid down at our doors at $5 per ton.

The phosphoric acid of such low percentage is valueless for dissolving purposes, because it will only yield practically a powder containing five to six per cent of available phosphoric acid. This low product cannot be used for mixing fertilizers, and it cannot be offered to the market when acid rocks containing thirteen to fourteen per cent of available phosphoric acid are offered as low as $10 to $12 per ton.

The products of the cremating process, therefore, will never become a commercial article. The question then arises, Can the same sanitary requirements be reached in another way? Without doubt they can, and, at the same time, the valuable constituents of the garbage destroyed in the furnace can be saved.

The city garbage, embracing all the refuse from the table and kitchen, changes its qualities considerably with the season. Just now we are in the vegetable period, and the results of my experiments represent about the lowest results obtainable.

The experiments I have made are not laboratory experiments, but practical manufacturing experiments, handling at a time from six to twelve tons of material. I have been in the fortunate situation of being able to utilize at intervals apparatus designed for other purposes, but very well adapted for the purpose of these experiments.

There is no secrecy about the principle of rationally utilizing garbage, and there are no new processes involved for which enormous patent fees will have to be paid.

The process is divided in two main operations:

(1) The separation of the grease by extraction.

(2) The drying of the remainder to form directly a salable product.

The results I have obtained yielded me about seventeen per cent on an average of dry product from garbage tankage, a sample of which you have before you. This dry tank-

age is a very excellent fertilizing material. Its composition is :

	Per Cent.
Moisture	4.41
Organic matter (including 4.3 per cent NH_3)	73.34
Mineral matter	22.25
	100.00

On a smaller scale than that which could profitably be carried on in Philadelphia, garbage is utilized successfully in this way in several places. I have received from Detroit samples of fertilizer made from garbage with as high as 5.37 per cent ammonia, 6.08 phosphoric acid ; and, at another time, 3.76 per cent ammonia, 3.36 phosphoric acid.

A specimen from Providence contained 3.55 ammonia, 3.38 phosphoric acid ; from other places, 3.86 ammonia, 3.51 phosphoric acid.

A fair average analysis, showing the minimum and maximum of what we may export, is as follows :

	Per Cent.	*Per Cent.*
Ammonia	3.50	4.50
Phosphoric acid (corresponding to phosphate of lime, 6.54, 13.28.)	3.	6.
Water soluble potash	0.25	0.50

At the present market price the unit of ammonia is sold at 2.60. This would give for the low grade a market value of $9.10 per ton ; for the high grade, $11 10 per ton.

It is safe to say that at the present market these products will realize $10 per ton. I leave phosphoric acid and potash out of the calculation to give you the practical valuation.

This material is a most excellent fertilizer, not only chemically but also physically, and its usefulness in the manufacture of fertilizers is without limit.

The amount of garbage tankage produced from a ton of material as gathered up from the houses, placed at the lowest percentage (viz.: about fifteen per cent), amounts to 300 pounds per ton. One hundred tons per day will give 30,000 pounds or fifteen tons daily.

Taking the daily average of one district, we will average seven and one half tons, or 2,250 tons per year ; and for the five districts, 11,250 tons, having a market value of $112,500.

Now, let us see what we restore to the fields in this amount of products.

The ammonia taken at four per cent in one ton of the tankage contains eighty pounds of this important plant food, and 112,500 tons, or the amount of production from the garbage of this city, should be equivalent to a saving of 9,000,000 pounds of ammonia, 9,000,000 pounds of phosphoric acid, and 500,000 pounds of potash.

All this has been taken from our fields, and, if wasted or destroyed, represents so much loss to the community at large; but if this amount be regained and restored in proper form to the farm and garden it means so much saving. All of this amount must be restored from other sources in some way. If any waste material is worth saving it is surely the garbage of the cities, as I have endeavored to show.

There is another feature connected with this waste, viz.: the regaining of the grease contained in garbage.

City garbage, at a low estimate, will yield three per cent. of a black grease, which you see in the samples before you. Even for this black grease there exists a limited market at low figures for lubricating purposes (for car wheels). This black grease rarely contains much free fatty acid, but it is by no means free from it. I have had samples containing over six per cent.

If the regular production should rise to such quantities as the garbage of the whole city will permit of producing, other uses must be found for this product, which in the crude state has but a limited field of usefulness. There are ways and means known to the chemist, however, to improve this raw product, and the refined material made from it will readily find a market in competition with other greases.

The result of a chemical artifice of this kind, I take pleasure in introducing to your notice in the sample before you. The method employed by me in this work is absolutely practical in respect of quick action, cheapness and positive results.

The grease stock so produced is very oily at 60° F. It yields about seventy to seventy-five per cent of this very fine oil which will find a ready sale. This oil will prove a puzzle to the best expert in the analysis of oils, for it contains traces of all oils and greases which enter the kitchen. It will chal-

lenge the reliability of all the color tests, the iodine numbers, etc., but in spite of its evasion of the methods of a Mailliau and Benedikt, it will find an excellent market.

The refined grease is a very fine soap stock, and a very crude product of a test in that direction I have with me. This soap is made solely from the same grease you have before you.

The rational mode of disposing of the city garbage is as simple as anything can be

First, to gain all the grease, we must apply practical methods of extraction by known solvents; then, to save the fertilizer materials, we must employ the most rapid and economical methods to expel the eighty per cent of water contained in the material.

Small amounts are easily handled; the difficulty arises when such enormous quantities stare one in the face. It is not, therefore, so much the chemical processes employed as the proper disposition of the plant, which must be well understood.

The stock delivered at the works must disappear in the process, on its arrival, and must never be permitted to rest for a moment until, after forty-eight hours, it is ready to be filled into bags for shipment in the form you see before you in this sample. It is no more difficult to handle the enormous quantities of garbage than it is to handle the animal refuse of our city.

My experience of many years in handling materials of this kind in enormous quantities, first in Chicago, and since 1877 in this city, as the chemical manager of the largest works of its kind, permits me to speak advisedly on this subject, and I am prepared to stake my reputation as a technical chemist on the assertion that the utilization of our city garbage can be carried on as a financially successful operation for the saving of the valuable materials contained therein. How important the solution of this question is for the city of Philadelphia is well illustrated by the constant discussion of the subject in the daily papers.

Cremation, as I have shown, produces, at considerable expense, a valueless product. The rational chemical process yields, at no more cost, products which make a large figure in the housekeeping of a community.

Should we cast aside the warnings of an economist like Carey? Shall the teachings of Liebig and of all the prominent agricultural chemists of all nations have been in vain? I trust not, and believe not.

In this century of progress, with our knowledge of chemistry, and with the most complete machinery at our disposal, it seems to me like a lapse into barbarism to destroy this most valuable material simply for the purpose of getting rid of it, while at the same time we are eager to obtain those very same materials for our fields by purchase from other sources.

There is no doubt in my mind that this question of the disposal of our garbage can be solved by careful consideration of all points, by practical business men, to the advantage of the city authorities and the contractors for this work, to the fullest satisfaction of the health authorities, and to the benefit of the farmer.

Capital intelligently invested should be productive, not destructive. Instead of spending thousands of dollars for the erection of crematories to destroy, let us erect sanitary chemical works to preserve this valuable material. There can be no danger to the public health in the conduct of a rational system for the utilization of garbage. All microbic carriers of contagious sicknesses are destroyed by a temperature of 212° F., and this dry product you have before you is as harmless to the public health as the flour in the barrel.

My desire and expectation in making this presentation of an important industrial and sanitary problem is to receive the endorsement of the Section and later on that of the Institute, to have you condemn the destruction of these valuable waste products, and approve, as the only right solution of this question, the preservation of these products displayed before you by a rational process of manufacture such as that indicated above.

THE VALUE OF A WATER ANALYSIS.*

A WATER analysis is really not an analysis at all, properly so called, but is a series of experiments undertaken with a view to assist the judgment in determining the potability of the supply. The numerical results of a water analysis are not only unintelligible to the general public, but are not always capable of interpretation by a chemist, unless he be acquainted with the surroundings of the spot whence the sample was drawn, and be posted as to the analytical methods employed. It is very common for water to be sent for analysis, with the request that an opinion be returned as to its suitability for potable uses, while at the same time all information as to its source is not only unfurnished, but is intentionally withheld, with a view of rendering the desired report unprejudiced in character. Such action is not only a reflection upon the moral quality of the chemist, but it seriously hampers him in his efforts to formulate an opinion from the analytical results.

For instance, a large quantity of common salt is a cause for suspicion when found in drinking water, not because of any poisonous property attaching to the salt itself, but because it is usually difficult to explain its presence in quantity, except upon the supposition of the infiltration of sewage; yet an amount of salt sufficient to condemn the water from a shallow well in the Hudson Valley could be passed as unobjectionable if found in a deep-well water from near Syracuse, N. Y. A knowledge of the history of the water is no less important in order to interpret the remaining items of a water analysis. Some time since a water was sent from Florida to this laboratory for examination, and was found to contain 1.18 parts "free ammonia" per million. Much "free ammonia" commonly points to contamination from animal sources, and had it not been known that the water in question was derived from the melting of artificial ice made by the ammonia process, the

* Abstract of a lecture by W. P. Mason, Rensselaer Polytechnic Institute, Troy, N. Y.

enormous quantity of ammonia found would have condemned it beyond a peradventure. As it was, the water was pronounced pure, the other items of the analysis having been found unobjectionable.

Analytical results which would condemn a surface water are unobjectionable for water from an artesian well, for the reason that in the latter case high figures in "free ammonia" or "nitrates" are capable of an explanation other than that of sewage infiltration. Even though such water should have at a previous period come in contact with organic waste material, yet the intervening length of time and the great distance of underground flow would have furnished abundant opportunity for thorough oxidation and purification.

"Deep" samples taken from the same lake, at the same spot and depth, will greatly vary in analytical results in the temperature of the water at the several dates of sampling, should be markedly different, owing to the disturbing influence of vertical currents.

Again, suppose it is desired to determine whether or not the water of a large stream is contaminated with upstream sewage as to be unfit for a town supply. An analysis of the water taken from the site of the supposed in-take would very probably be valueless, because the enormous dilution to which the admitted sewage would have been subjected would remove from the analytical results everything of an absolute character. Examinations of any real value in such should always be of a comparative nature. Samples should be taken above and below the point of contamination, and again at the proposed in-take. If the difference between the first and second samples, which is a measure of the pollution, be maintained, or nearly so, at the point of in-take, then the water should be condemned no matter how completely the analytical results fall within the limits of the so-called standards of organic purity.

As Nichols has well said, "It is a great mistake to suppose that the proper way to consult a chemist is to send a sample of water in a sealed vessel with no hint as to its source. On the contrary, the chemist should know as much as possible as to the hint and source of the water, and if possible should take the samples himself." In taking samples for

so important a matter as a town supply, the chemist should unquestionably personally superintend their collection; but for individual outlying waters, printed instructions have to be frequently depended upon. Those issued from the laboratory are as follows:

Directions for taking a water sample:

Large glass-stoppered bottles are best for sampling, but as they are seldom at hand, a two-gallon, new demijohn em ployed, fitted with a new soft cork. Be careful to notice that no packing straw or other foreign substance yet remains in the demijohn, and thoroughly rinse it with the water to be sampled. Do not attempt to scour the neck by rubbing with either fingers or cloth. After thorough rinsing fill the vessel to overflowing, so as to displace the air, and then completely empty it.

If the water is to be taken from a tap, let enough run to waste to empty the local lateral before sampling; if from a pump, first pump enough to empty all the pump connections; if from a stream or lake, take the sample some distance from the shore, and plunge the sampling vessel a foot and a half below the surface during filling, so as to avoid surface scum.

In every case fill the demijohn nearly full, leaving but a smalls pace to allow for possible expansion, and cork securely. Under no circumstances place sealing wax upon the cork, but tie a piece of cloth firmly over the neck to hold the cork in place. The ends of the string may be afterward sealed if necessary.

Bear in mind throughout that water analysis deals with material present in very minute quantity, and that the least carelessness in collecting the samples must vitiate the results. Give the date of taking the sample, and as full a description as possible of the soil through which the water flows, together with the immediate sources of possible contamination.—*Engineering News.*

"RISE EARLY IN THE MORNING, not only to avoid self-reproach, but to make the most of the little life that remains; not only to save the hours lost in sleep, but to avoid that languor which is spread over mind and body for the whole of that day in which you have lain late in bed."—*Sydney Smith.*

A MEDICAL OBJECTION TO (THE *ABUSE* OF*) DANCING.

By GEORGE L. BEARDSLEY, A.M., M.D., Birmingham, Conn.

THESEUS, in "Midsummer Night's Dream," asks, "Is there no play to ease the anguish of a torturing hour?" His idea of mirth is akin to that of many who prate about "innocent amusements" to kill time or put an end to the megrims, either caring or thinking not for the *after-effects* of a revel. There is often a greater good done to a tired brain by a game than by medicine, but it is of vital concern to the person to be entertained that the sport has not too much rigor. Is dancing a jollity of this kind? This is the suggestion of the article now submitted. From a physical standpoint or on the issue of health it is susceptible of proof that the muscular fatigue and strain incident to this sort of fun is detrimental to the bodily vigor and endurance of woman.

Medical men, particularly specialists, meet often with patients who are nothing short of invalidism. They are walking valetudinarians who ought to be in a sanitarium, and would be if they had the money. A large percentage of the feeble, nervous, chlorotic girls and women who frequent a doctor's office are those who are obliged to eke out an existence with a body not put together to bear much of any burden, and yet because of a contracted purse must all day operate a treadle or measure calico or tend a carding machine or teach school. The public knows nearly nothing about the feeble energy of the majority of girls who work in our stores and factories for their bread and clothes, how small is their surplus of strength beyond what is necessary to the day's call on their nerves and muscles. The testimony of those who have particularly looked into the causes of woman's aches and invalidism agrees with the saying of Pope that she is "fair by defect and delicately weak." Is it a marvel, then, that when such structures are

* THE SANITARIAN'S amendment.

taxed by the wearying gymnastics of a ball-room, their savings-bank of health early becomes insolvent? Graceful dancing is a no ordinary nor easy achievement; it requires more than a relish for light music or a lively company. There are few who are really artists in waltzing, and as in athletics muscle and agility are *sine quâ non*, so to lead a cotillon or to step to schottische time involves a quick adaption of muscles that if weary or dull answer too slowly for grace the motions of a light-tripping partner. To dance with ease and becomingly every joint ought to be supple, every nerve fresh, every muscle limber, the entire body in a state of exaltation, not from excitement, but physical buoyancy. And yet a great percentage of those who waltz or promenade at our public dances engage in the pastime at the conclusion of a day's toil with not a moment of recuperation, and are not physically able to go through the steps.

A highly intelligent lady who is of delicate health and a close student remarked to me recently that she danced because she needed the exercise. There was no gainsaying her need of recreation, but just how three hours' waltzing—and that is work emphatically—in a poorly ventilated, crowded parlor could be a refreshing "exercise" is past my divining. It takes a robust, wiry, alert person to dance creditably, and my frail friend would be no more fit after such an "exercise" to ply her calling the next day than would a watcher be for a night's round in a sick-room who had lost her sleep for a week. The girl who is compelled to labor all and every day for her board-money has gone through all the strain her machinery can stand and generally more. It is time when night comes to halt and give the engine a rest for the next day's action. A dance till midnight for the store-clerk, shop-girl, school-teacher or dress-maker is like forcing a trotter after he has barely won one heat to secure a second. The horse gets distanced and breaks down simply because he has been driven beyond his limit.

If dancing is too expensive a sport for those who earn their bread by the sweat of their brow and have no strength to spare, are the same objections tenable in the case of the wealthy society lady who has a retinue of servants, does no manual labor, has no responsibility to vex her, and can sleep

the entire day after a night of gayety? If it only required massage, baths, nicely prepared repasts, and comfortable beds to insure a complete recovery from the enervating or depressing effects of hours of waltzing, those who belong to the Four Hundred ought to show no marks of dissipation. It does not follow, however, that because of so favorable surroundings those who lead the fashionable levees and are distinguished at every cotillon are not affected, their health not compromised, by excesses or irregular hours. The experience of physicians is that insomnia, neurasthenia, dyspepsia, hypochondriasis, nervous and organic infirmities generally, are very common among society women. It is a statistical truth that the "rest-cure" institutions and sanitaria thrive on material furnished from this class. Those of *le beau monde* play out earlier than one would imagine; experience reactions in consequence of a life artificial and exciting in the extreme, that are highly exhausting, and keep up on the stimulus of the will until some piece of their machinery snaps under the high tension and they don the habiliments of a chronic cripple. Those of the peerage are by no means exempt from the ills the populace suffer, and if one, sitting in the lap of luxury, on whom even summer winds do not roughly blow, hasn't a constitution that can brook the wear and tear of ball-room feats, what is to be said of the overworked and under-fed, the heirs of toil, who are bound to follow the folly of their high-born sisters? The question that concerns the mother and daughter is, Does it pay to indulge in a sport just to be in the fashion or to drive the blues or dull care away when nature protests against it? That it doesn't is evidenced by the fair-sized list of ailing maidens and mothers out of sorts that are now-a-day acquaintances.—*The Medical and Surgical Reporter.*

"THE PROTECTION OF THE PUBLIC HEALTH," says Bishop ("Criminal Law," § 489), "is an interest of the first importance to every government. Without health the members of a community cannot discharge duties either to the government or to one another. Therefore anything of sufficient magnitude for the law's notice, calculated to impair the public health, is indictable at the common law."

SPONTANEOUS COMBUSTION.

THE following is the condensed report, published by the *Weekly London Times*, of an address delivered by Professor Vivian Lewes to workingmen at the meeting of the British Association recently held in Nottingham, England.

The learned professor began by showing how the labors of Priestly and Lavoisier had led to a true knowledge of the actions taking place during combustion, and showed by experiment that in all the ordinary cases of combustion a chemical union was taking place between the constituents of the burning body and the oxygen of the air. The idea of combustion, however, must not be limited to processes of oxidation, although they were the most important; and in order to get a true conception of the action, combustion must be defined as "the evolution of heat during chemical combination." It was then shown that the rate at which chemical action took place was to a great extent influenced by various factors, and that there were many cases in which the action was so slow that the heat escaped as fast as it was generated, and no perceptible rise of temperature took place, and such actions were generally looked upon as cases of "slow combustion." Slow combustion was one of the most important natural actions, and by its means the waste matter in the world was slowly got rid of, and converted once more into simple gaseous compounds, all cases of decay being slow oxidation or combustion. All inflammable substances had a fixed temperature at which they burned actively with flame or incandescence, and this was called the "point of ignition." In some cases an inflammable substance undergoing slow combustion was surrounded with a non-conducting material, and the heat due to the actions going on gradually rose until the point of ignition was reached, and it was this change from the little noticeable slow combustion to ordinary combustion, with its manifestation of flame or incandescence, to which the term "spontaneous combustion" had been given. The lecturer then proceeded to consider special cases of spontaneous combus-

tion, and showed that freshly burned charcoal, especially when powdered, absorbed oxygen from the air with considerable rapidity and with a rise of temperature, which with a large mass was in some cases sufficient to set it on fire. The important bearing of this was that beams, skirting boards, etc., in contact with flues and heating pipes, were liable to become charred at a comparatively low temperature, and this form of charcoal was very liable to spontaneous ignition when air came in contact with it. In the same way coal had the power of absorbing oxygen from the air, and when in masses of a thousand tons or more, especially when much broken and moist, would undergo heating, and even ignition. This was due to the absorbed oxygen setting up chemical action with the hydrocarbons of the coal, and not, as was generally supposed, from the oxidation of the coal. Nearly all the vegetable and animal oils had the power of absorbing and combining with oxygen, and this gave them the power of drying; and one of the most usual causes of spontaneous ignition in workshops and factories was to be found in oily waste or rags, as the oil being spread on the surface of the material offered a large surface for oxidation, while the rags or waste, being excellent non-conductors of heat, allowed the temperature to rise until ignition took place. Well-authenticated cases were known in which sparrows building their nests of oily waste in the eaves of houses had caused serious fires. Hayricks which had been built from grass improperly dried before stacking were also very liable to spontaneous ignition; this being due to the sap of the grass taking up oxygen during a process of fermentation which evolved heat, and the heat being kept in by the surrounding hay, rose until the ignition point was reached. If grass once well dried then became wetted by a shower, it became mouldy in the stack, but did not heat. The lecturer then concluded by emphasizing the fact that the so-called spontaneous combustion was merely an increase in the rate of chemical combustion from the slow stage, which was hardly noticeable to active combustion, and showed the fallacy of supposing that the living body could undergo any such action. The demonstrations were interesting, and the conclusion of the lecture was followed by prolonged cheering.—*Insurance Monitor, January*, 1894.

MEDICAL EXCERPT.

By T. P. Corbally, A.M., M D.

Parasites in Cancer.—M. Gustav Nepveu reports to the Académie des Sciences (*La France Médicale*, December 15th, 1893) as follows :

"The question regarding the origin of cancer is far from being settled. Is cancer a trophical disease or is it a parasitic lesion? The great number of delicate elements found in cancer warrants the belief that the karyokinetic changes which are produced in these conditions cannot of themselves explain their presence, nor that of certain cellular formations which are entirely abnormal.

"These delicate elements are *spores* in different stages of development—*sporoid cells*, and *parasitic epithelioid cells*.

"These spores are collected in masses in sporiferous cells of different appearance; they are also free in the plasmatic spaces, etc. In the course of their development they pass into another state, that of *sporoid* cells, and arrive at the stage in which they assume the appearance of adult cells of the epithelioid form.

"The spores and sporoid cells, to the number of eight, ten, or more, penetrate into the *amiboid* cells—the white cells of other authors—which are very numerous in the superficial layers of the tumors. They then penetrate into the cells, by way of karyokinesis, the products of which they infect, and finally into the nuclei of the *epithelial* cells. Thence they fall into the cellular cavities, compress them, and produce an atrophied condition of the nuclei. These cells of *sporic* origin have a peculiar stamp. The new intra-cellular formations which are the results of such conditions present sometimes many nucleoles, sometimes striated on the surface of the cellule around the nucleole, sometimes a species of central comma, and sometimes spores mounted on stems like musical notes, etc. The free formations derived from the spores have a peculiar appearance and seem to be atrophied.

"Along with these formations must be mentioned: *Cystic cells* fixed to the walls of the lymphatics, with four interior cells, and, in addition to these, there are very small *epithelioid* cells in the interior of other *epithelial* cells which are well developed and have also a nucleus divided into four parts; there are also very largely developed epithelioid cells which have four white cells in their interior, at the point of the original nucleus; I say white cells by way of abbreviation, to indicate those of a rounded form and determined volume; they are really cellules, resulting from the division of the nucleus, and are essentially parasitic, resembling the *amiboid* bodies filled with sporoid cells, which have been described above. It is necessary to note also the small cells with large nuclei which may be brightly colored with fuchsine phenol, in aqueous solution. They are generally in number about ten or twelve, in a common envelope; but these are rarely found. These little cells are transformed into *amiboid* cellules, with from eight to ten little nuclei. Each of these nucleoles becomes a very small *epithelioid* or *parasitic* cell."

The development of this whole subject indicates a special action which differs essentially from the karyokinesis in its best recognized features, and resembles the evolution of the sporozoaires. If the parasitic doctrine, even if not well founded, a fact which experiments can *perhaps* alone determine, it would be very useful to go a little further into the details of this pathogenic research which so many authors have already commenced, for it is to be hoped that by such means something more may be added to our present knowledge of the parasites of cancer.

ANTI-DIURETIC SUBSTANCES IN THE URINE.—M. H. Forenken, in a report to the Société de Biologie (*Le Progrès Médicale*, December 2d, 1893), said that the diuretic elements contained in the urine have been isolated and described by M. Bouchard and by M. Charrin. But, besides these, there are anti-diuretic substances in the urine. A series of experiments have proved that rabbits, to which urine of a moderate degree of toxicity was administered, urinated very little or not at all; the urine injected accumulates in the tissues, but does not pass through the kidneys. Such cases occur about fifteen

times in fifty, and prove that there are elements in the urine which, if in excess, paralyze the action of thekidneys.

OZENA.—A new contribution to the study of the disease by Dr. Grünwald. The Memoir (*El Siglo Medico*, November 26th, 1893) states that a causative relation exists between the complex symptoms of the disease and the local affections, or, as better expressed, between the nasal symptomatology of ozena and empyema of the accessory cavities, or better, between the adenoid vegetations and the hypertrophy of the tonsils.

The results of this important communication may be summarized in the following conclusions:

1. Ozena is a symptom or a series of symptoms.

2. It has not, as yet, been possible to discover its special and certain etiology, its peculiar and characteristic properties, nor even its anatomo-pathological characteristics.

3. In reference to its consequences, the name is inappropriate, misleading, in many cases, and in others it is devoid of precision, and would lead to the inference that all the obscure diseases of that class would be designated as *cryptogamic ozena*.

4. As a cause of the formation of fetid crusts in the atrophied nasal cavities he has found in many cases the existence of disease of the surrounding cavities, even when ocular inspection would not have given rise to a suspicion of its existence *à priori*. In other cases he has found a causative relation between affections of the pharyngeal lymphatics and ozena.

5. It has not as yet been demonstrated that in the doubtful cases—those in which neither foreign bodies nor syphilis nor any other known factors are found—result from affections of the accessory cavities.

6. Nevertheless, in all these doubtful and obscure cases, great care should always be paid to the examination of the accessory cavities, above all, if the patients are young and the condition of the pharynx should be always examined.

7. Thus far he has not, in any case, been able to prove, certainly not even probably, that fetid crusts are formed as a consequence of simple atrophy of the nasal fossæ.

8. At present there is nothing that authorizes the admission of any constitutional diserasia as a cause of this affection. On the contrary, the alteration in the general condition, the dis-

turbances of digestion, the glandular swellings, etc., may be considered as the consequence of the fetid suppuration.

9. The spontaneous cure that happens in some cases gives good grounds, to a certain extent, that there is a connection between the symptoms observed and adenoid vegetations.

TREPHINING.—M. Pean presented to the Académie de Médicine a little girl on whom he had lately operated (*La France Médicale*, December 1st, 1893), and said that late discoveries relative to the localization of cerebral disturbances have led to important therapeutic applications, which he proceeded to describe.

Emilie C—— was in good health up to July 14th, when a ball from a revolver of small calibre, in the hands of her father, entered her right eye and penetrated the brain. The child complained of headache and intense pain in the left eye. A neuritis of the optic nerve was diagnosed by M. Gillet de Grandmont, which seemed to be of infectious origin. In the month of September the left arm was paralyzed.

On September 24th M. Ballet diagnosed a lesion affecting the motor centre of the upper limb—that is, the middle part of the frontal and parietal ascending convolution. The child was taken with *Jacksonian* epilepsy. Trephining was performed at the International Hospital on the morning of September 28th. It was decided to open the skull on a line with the upper part of the fissure of Roland, the *pia mater* was incised, and about 200 grammes of pus escaped. The pus cavity was washed, the *dura mater* sutured with cat-gut, the soft parts with hair, and a rubber drainage tube was left in place.

Since the operation there has not been the slightest symptom of an epileptic attack.

This case shows that trephining may render great service in epilepsy, and even save life in apparently desperate cases.

THE THERAPEUTIC VALUE OF GRINDELIA ROBUSTA.—M. Jasiewitz has presented to the Société de Médicine et de Chirurgie Pratiques a note (*Le Progrès Médicale*, December 9th, 1893), in which he says that he has employed *Grindelia robusta* for a long time in affections of the respiratory tract.

He has found that this medicine exerts a remarkably beneficial influence in cases of dyspnœa. Its influence is not specially marked in bronchitis; its effects are most favorably manifested in cases in which the nerves are unusually disturbed. In asthma, in croupal cough—known as laryngitis stridulus—in fine, in all the spasmodic phenomena of respiration, its soothing effects are equal to that of belladonna, but with the great difference that grindelia robusta and its preparations never cause toxic phenomena in those who use it as do the preparations of belladonna. It may also be remarked that the soothing effects of grindelia is much more rapid than that of belladonna. The best way to administer the drug is to prescribe two to four grammes of the fluid extract, according to circumstances.

EUROPHEN.—Dr. Neuberger reports in *Monatsheften für Practische Dermatologie*, Vol. XVII., No. 8, the experience he has had in connection with that of Dr. Defelein in the use of europhen in balanitis, herpes præputialis, ulcus molle, etc. It is used as powder or ointment. In order to prevent retention of secretion, it is often advisable to apply the ointment over the powder. In syphilis also they have frequently used injections of europhen 1 : 100 ol. oliv., and obtained good results; though Eichhoff, who was the first to recommend injections, has abandoned their use. In general, europhen appears to be a good remedy in such cases.

TRIONAL AS A HYPNOTIC.—Dr. William C. Krauss (*New York Medical Journal*, April 22d, 1893) writes as follows:

"Perhaps no one class of drugs attracts the attention of the physician more than the hypnotics. This is due partly to the obstinacy and inveteracy of the symptom insomnia, and partly to the inefficiency of many of the drugs ordinarily prescribed for this condition. During the past few months a number of contributions have appeared in medical literature laudatory of the preparation called trional as a hypnotic, especially in nervous and mental disorders. Trional belongs to the same chemical family as sulfonal, but contains three ethyl groups instead of two. The drug was given in fifteen-grain to twenty-five-grain doses fifteen to forty-five minutes before retiring; and in those cases in which pure insomnia existed,

sleep followed in from fifteen minutes to an hour and a half.

"My results with trional have been very encouraging, although I have used it in only eight to ten-grain doses and have not been obliged to repeat the dose. The cases were all of nervous diseases—such as exophthalmic goitre, epilepsy, hysteria, neurasthenia, trifacial and intercostal neuralgia, prurigo, nervous disturbances during the menopause, vertigo, etc. In all of these cases—fifteen in number—except in those where there was peripheral nerve irritation, I obtained gratifying results." In the patients suffering from trifacial and intercostal neuralgia Dr. Krauss found that trional combined with a simple anodyne was rewarded with good, quiet sleep. In but one case, prurigo, was a failure recorded.

"In none of these cases," says Dr. Krauss, "were disagreeable symptoms noted, although in two of them other hypnotics had been abandoned on account of their irritating qualities. From my experience it would seem that trional is a fairly good hypnotic; that it produces no disagreeable after-effects, and that combined with a simple anodyne it may be used in the insomnia of painful nervous disorders."

FLOATING KIDNEY.—M. Tuffier presented in a communication to the Société de Chirurgie some very interesting clinical experiments (*Gazette Hebdomadaire*, December 17th, 1893) on the pathogeny, the pathological anatomy, and treatment of intermittent hydronephrosis.

He has demonstrated that there is a close causative relation existing between intermittent hydronephrosis and movable kidney. This disease is frequent in women in whom floating kidney is often found.

M. A. Mathieu has made systematic experiments on movable kidneys in three hundred and six women treated in the general hospital, and in forty-six women treated primarily, for serious dyspeptic troubles. He found in the former class the kidneys diseased in eighty-five cases, or about once in four, and thirty-two times in the latter class, that is, two cases in every three.

There is, according to him, a certain relation between nephreptosis and dyspepsia. He thinks we should examine for nephreptosis in all cases of dyspepsia.

In his experiments M. Tuffier has found that the ureter is bent when the kidney is displaced.

In moving the kidney in animals and flexing the ureter he has artificially produced hydronephrosis.

He has performed a few successful nephropexies which caused the disappearance of the intermittent hydronephrosis, but he does not attempt the operation unless it is possible to empty the hydronephritic sac.

Nephrectomy may be performed in certain cases, but it is necessary to be assured of the condition of the kidney that will remain after the operation.

A DOG DEPRIVED OF ITS STOMACH was recently presented to the Société de Biologie by M. Pachon (*Le Progrès Médicale*, December 9th, 1893). The removal of the stomach was made with the assistance of M. Carvallo. M. Pachon presented at the same time several anatomical preparations, from which it was seen that the resection of the stomach was very extensive, indeed, almost complete. The animals thus deprived of so much of their digestive organs survived, a fact which was shown in 1878 by Czerny ; this proves that the stomach is not —in those cases—absolutely necessary for life. The results of such experiments will be to afford opportunity for many interesting physiological experiments regarding digestive agents.

From the results thus obtained the authors have been able to show that an exclusively milk diet is insufficient ; it became necessary to feed animals with soup and other articles from the beginning of the experiments. At the end of about three weeks a panada of bread and cooked meats can be given ; cooked meat is well digested, raw meat but imperfectly. The animal vomits often, so that it is easy to determine the fact that the contents of the duodenum are in general acid. The urine remains acid during the entire period of the experiments. Decayed meat given as food does not cause any disorder in the digestion.

THE PRESENT EPIDEMIC OF INFLUENZA.—The sickness statistics of Michigan, says Dr. H. Baker, Secretary of the State Board of Health, have demonstrated the law that, gen-

erally, influenza (*la grippe*) is quantitatively related to the atmospheric ozone, the more ozone the more influenza; and the law that remittent-fever is inversely related, the more ozone the less remittent-fever. The unusual amount of ozone, the increase of influenza, and the falling off of remittent-fever shown in the State Board of Health *Bulletin* for the week ending November 18th illustrate these general laws.

NITRIC POISONING.—Professor Emmerich, of Munich, assisted by Professor Tsubio, of Tokio, has been investigating Asiatic cholera with the result that after long experiments of the most delicate and minute description, he is satisfied that Asiatic cholera is due to nitric poisoning produced by the bacilli discovered by Professor Koch. Extensive experiments have been made upon animals, and it has also been found by spectral analysis that those succumbing to poison by nitric acid furnish identical symptoms and characteristics with those who die of cholera.—*London Letter, American Practitioner and News, September 23d*, 1893.

THE ACTUAL RECORDS OF THE CLINICAL THERMOMETER have been shown, by M. Ominus, to be unsatisfactory and absolutely insufficient in a physiological point of view. The same temperature that will be registered to appear as warm at eleven in the morning will appear to be cold at five in the afternoon, especially on fine days. This change of conditions may be illustrated by citing the difference which would appear if an ordinary thermometer were compared with one enveloped in a wet cloth. In the same way evaporation causes a coldness of the body more or less great according to the hygrometric condition of the air, so the sensation of cold which is experienced and depends on the loss of heat in the organism varies with the dryness or humidity of the air. In meteorological observations the given temperatures are taken in sheltered places and in the shade.

"This limited and artificial notion," says *Le Progrès Médicale*, "is of very little importance in a medical point of view; the patients pass from the sunshine to the shade, from protected places to the free air. It is also absolutely insufficient as a means of determining the therapeutic value of a climate."

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of November a mortality of 59, of which 33 were colored, and 22 were under five years of age. The annual death-rate per 1000 was 23.16.

Zymotic diseases caused 9 deaths, and consumption, 10.

ARKANSAS.—D. W. Holman, Secretary, Little Rock.

CALIFORNIA.—J. R. Laine, M.D., Secretary, Sacramento.

Reports from 92 cities, towns, villages, and sanitary districts, aggregating a population of 808,849, show a total mortality of 1098 from all causes during the month of November. This corresponds to a death-rate of 1.35 per 1000 per month, or 16.20 per 1000 per annum.

There were 169 deaths due to consumption, 105 to pneumonia, 49 to bronchitis, 11 to congestion of the lungs, 10 to diarrhœa and dysentery, 15 to cholera infantum, 92 to other diseases of the stomach and bowels, 16 to diphtheria and croup, 1 to scarlatina, 7 to whooping-cough, 30 to typhoid-fever, 6 to malarial fevers, 1 to cerebro-spinal-fever, 28 to cancer, 2 to erysipelas, 80 to heart diseases, 9 to alcoholism, and 467 to all other causes.

San Francisco, 330,000: Total mortality, 525. Consumption, 74.

Los Angeles, 65,000: Total mortality, 93. Consumption, 19.

Sacramento, 30,000: Total mortality, 33. Consumption, 2.

CONNECTICUT.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for November was received from 168 towns in the State, in a population of 797,450.

There were 1038 deaths reported during the month. This was 30 less than in October, and 21 more than in November, 1892, and 80 more than the average number of deaths in November for the five years preceding the present.

The death-rate was 16.0 for the large towns; for the small towns 14.4 and 15.4 for the whole State.

The deaths from zymotic diseases were 186, and from consumption, 104. Twenty-six towns reported no deaths.

New Haven, 90,000: Total mortality, 144. Annual death-rate per 1000, 18.4.

Bridgeport, 58,243: Total mortality, 73. Annual death-rate per 1000, 15.0.

Hartford, 56,000: Total mortality, 94. Annual death-rate, 20.1 per 1000.

Waterbury, 38,500: Total mortality, 52. Annual death-rate, 16.2 per 1000.

Meriden, 26,510: Total mortality, 30. Annual death-rate per 1000, 13.6.

Norwich, 24,200: Total mortality, 31. Annual death-rate per 1000, 11.2.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the four weeks ending December 30th, a mortality of 476, of which number 175 were of colored people, and 106 were under five years of age. The annual death-rate was 21.7 per 1000. There were 86 deaths from zymotic diseases, and 70 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of October, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 525; number of marriages reported, 375; number of deaths reported, 315; birth-rate per 1000 per annum, 16.09; death-rate per 1000 per annum, 9.65; average age of decedents, 28 38; number of deaths under

five years of age, 96. Deaths from zymotic diseases numbered 70, and from consumption, 38.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000 : A. R. Raynolds, M.D., Commissioner, reports 1804 deaths during November, representing an annual death-rate of 13.53 per 1000.

The mortality under the age of five years was 636. The deaths from zymotic diseases numbered 301, and from consumption, 169.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—L. F. Salomon, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for six weeks ending December 30th, 1003 deaths, of which number 396 were among the colored people, and 278 of children under five years of age. There were 192 deaths due to zymotic diseases, and 113 to consumption. The annual death-rate was 36.11 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427 : James F. McShane, M.D., Commissioner, reports for November that the total deaths were 776, an increase of 66, compared with the corresponding month of November, 1892. Of these 598 were whites and 178 colored ; a death-rate of 18.68 per 1000 for the former and 30.08 per 1000 for the latter. The death-rate per 1000 for the whole

population was 20.46. Forty-three died from infectious diseases, 79 from consumption, 68 from pneumonia, 32 from bronchitis, 19 from bright's disease, and 34 from typhoid-fever. Two hundred and fifty-eight, or 33.23 per cent of the total deaths, were in children under five years of age.

During the month 141 cases of infectious diseases were reported, an increase of 74 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston. *Boston*, 487,397 : S. H. Durgin, M.D., Chairman.

There were 856 deaths reported in November, of which number 293 were under five years of age. The annual death-rate per 1000 was 21.07. There were 133 deaths from zymotic diseases, and 103 from consumption.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of December, 1893, compared with the preceding month, the prevailing direction of the wind was the same (southwest), the velocity was slightly greater, the temperature was 7.47° lower, the rainfall was one inch more, the absolute humidity was less, the relative humidity was more, the day and the night ozone were less, and the depth of water in the well at Lansing was seven inches more.

For the month of December, 1893, compared with the preceding month, pleuritis, pneumonia, influenza, and erysipelas increased, and typhoid-fever, remittent-fever, and intermittent-fever decreased in area of prevalence.

For the month of December, 1893, compared with the average for corresponding months in the seven years 1886–92, the prevailing direction of the wind was the same (southwest), the velocity was nearly the same, the temperature was 1.41° lower, the rainfall at Lansing was 1.25 inches more, the absolute humidity was less, the relative humidity was slightly more, the day and the night ozone was less, and the depth of the water in the well at Lansing was ten inches more.

Compared with the average for the month of December in the seven years 1886–92, influenza, pleuritis, and scarlet-fever were more prevalent, and remittent-fever, intermittent-fever, consumption, and erysipelas were less prevalent in December, 1893.

Including reports by regular observers and others, scarlet-fever was reported present in Michigan in the month of December, 1893, at eighty-six places; typhoid-fever at forty-eight places; diphtheria at forty-six places; measles at fourteen places; consumption was reported present by 37 per cent of the observers making weekly card reports.

Reports from all sources show typhoid-fever reported at forty places less; diphtheria at twenty-eight places less; scarlet-fever at nine places less, and measles at two places more in the month of December, 1893, than in the preceding month.

At the Quarterly Meeting of the State Board, at Lansing, January 13th, Professor Delos Fall made a preliminary report on water supply and purification of sewage contamination. Professor Fall has undertaken an analysis of the uncontaminated spring waters throughout Michigan in order to ascertain the normal amount of chlorine. Ten parts per million has been considered the maximum amount of chlorine which should be found in good spring water, but he thinks that the standard will have to be raised somewhat for Michigan as most of the samples that he has examined contain over ten parts of chlorine per million of water. He proposes to continue this analysis of spring waters, and would be glad to get samples of such spring water as is not contaminated by leachings from barns, stables, residences, etc. He wants a half pint of such water in a perfectly clean bottle, with a new cork, with reliable statement of source and surrounding conditions. His address is, Professor Delos Fall, Albion, Mich.

The subject of the further continuance of the Michigan Inspection of Immigrants was discussed. Secretary Baker thought that the Michigan inspection of immigrants, which has been in progress for some time, has done much to prevent the introduction and spread of dangerous communicable diseases. He also thought that the stand the Michigan State Board had taken had been the means of raising the standard of quarantine in this country, tending as it has toward the disinfection of the baggage of all immigrants coming into this country. It is not improbable that the inspection at the border has been the means of keeping Michigan free from smallpox, and it is probable that it has lessened the introduction

of other diseases. The Michigan Inspection Rules for disinfection were carried out during the summer at Levis, near Quebec, and are now being carried out at Halifax under the direction of Dr. Wickwire, Port Health Officer of Halifax. Small-pox is now quite prevalent in several States.

The recent judicial decision was discussed, and a resolution adopted as follows :

"*Resolved*, That in view of the adverse decision of the Hon. Joseph H. Steere, of the Eleventh Judicial Circuit, declaring the penalty portion of the Michigan Quarantine Law unconstitutional, the immigrant inspection at the Michigan border is hereby suspended from and after January 13th, 1894."

It is understood that legal measures have been taken to obtain a decision on this subject by the Supreme Court.

The subject of a Chair of Sanitary Science at the State Normal School and at the State Agricultural College was presented by Dr. Baker. He mentioned that the State Board of Agriculture had already been memorialized by the President and other members of this Board and himself to establish a Chair of Hygiene ; but he thought the Board as a whole should continue to exert its influence. He argued that the State law compelled the common schools of Michigan to devote time to the teaching of hygiene, but that there was not much provision for the proper education of those teachers who are compelled to teach hygiene. The State Normal School is devoted to the training and education of teachers, and the State Agricultural College has its vacation in the winter in order that its students may teach, yet neither of these institutions has a Chair of Sanitary Science. The State Board of Health had already put forth its efforts for such a chair at the Michigan University, and a Laboratory of Hygiene had been established, and is now doing great good. Dr. Baker thought that the youngest pupil in our schools should have an idea of how the most dangerous communicable diseases are spread, and that it would be just as practicable to teach them the restricted measures, as it is to teach them all about the bones, muscles, and nerves, as is now attempted. Each pupil should also know just what disease causes most deaths in Michigan and just how it may be prevented or avoided. But how are these pupils to be taught such subjects when

there is practically no adequate provision for the education of the teachers? Professor Fall said he was very glad to say that Albion College was teaching sanitary science. A large class of the best students in the college have this course of training.

On motion of Professor Fall the Board voted that a committee of three be appointed by the President to memorialize the State Board of Education to establish a Chair of Sanitary Science at the State Normal School. Professor Fall, of Albion, Dr. Baker, of Lansing, and Dr. Milner, of Grand Rapids, were appointed.

On motion of Dr. Baker it was voted that Dr. Gray, of Pontiac, act as chairman of a committee to memorialize the State Board of Agriculture to establish a Chair of Sanitary Science at the State Agricultural College. It was also voted that President Wells and Professor Vaughan, of the university, be the other members of this committee.

Detroit, 230,000: Duncan McLeod, M.D., Commissioner, reports for November 286 deaths, of which 89 were under five years of age.

The annual death-rate per 1000 of population was 15.13.

The deaths from zymotic diseases numbered 36, and from consumption, 27.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing. The mortality record for October was 921 deaths from all causes. Compared with average of six years (915), greater than any other year since 1888 (1263). The correct way of estimating population between census years is difficult to determine. The best we can do is to assume as correct the census returns of 1890, as the average of 1888–93, and include for each month only those localities from which we have reports. The error is in underestimating the population. Apply this method to the deaths from all causes for October, they represent 12.45 dead to 1000 living, or a mortality of 1.24 per cent, which is evidently too great, but which we have no means accurately to correct. Of the diseases specified in our list, the mortality of but one is in excess of the average of six years (78), enteric-fever (82), which is nearly twice as great as that for October, 1892 (42), and much larger for this month

than in any other year since 1887. The mortality from diphtheria in October has steadily declined for six years, and was less in October, 1893, than average (67).

The mortality from pneumonia was less than average (37) and same as last year (32). The same is true of bronchitis (11—average 13). Both are less than the average of this month for five years. Diarrhœal diseases caused less than the average mortality. Deaths from all other causes were in excess of average (580—average 528). The population accounted for in these returns (899,271) is less by nearly 50,000 than that of October, 1892 (946,200).

Minneapolis, 223,700 : E. S. Kelley, M.D. Commissioner.

During the month of November, 1893, there were 165 deaths, representing an annual death-rate of 7.37 per 1000. Zymotic diseases caused 41 deaths, and consumption, 24. There were 50 deaths under five years of age.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackso n.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—Ezra M. Hunt, M.D., Secretary, Trenton.

Paterson, 92,793 : J. L. Leal, M.D., Health Officer, reports for October 138 deaths, 62 of which were under five years of age. The annual death-rate per 1000 was 18.06. There were 44 deaths from zymotic diseases, and 13 from consumption.

Hudson County, 301,298 : W. W. Varick, M.D., President.

There were reported during the month of November, 441 deaths, of which 174 were under five years of age. Annual death-rate per 1000, 20.8. Zymotic diseases caused 78 deaths, and consumption, 43.

NEW YORK.—Lewis Balch, M.D., Secretary, Albany, reports in the *Monthly Bulletin* as follows :

The reported mortality for the month of November has further decreased from the low daily average of 290 in October to one of 281, which is the same as that of November, 1892. This is uniformly the healthiest month in the year in this State, the number of deaths daily being less during November by 25 than the daily average for the past eight years. Compared with November, 1892, the zymotic mortality, and also the infant mortality, is lower; both are, also, lower than during the month of October. Typhoid-fever caused the same number of deaths as a year ago, and 75 fewer deaths than in October. Scarlet-fever continues, with little change, to be less prevalent than last year. There is an increase in measles since October, chiefly in New York City. Diphtheria caused the same mortality as in last November, but show a marked continuance of the increases in prevalence since August, causing 100 more deaths than in October; the same relative increase occurred in 1892; deaths are reported from forty-four towns not noted in the *Bulletin* list, chiefly in the central part of the State; the chief increase, however, being in some of the larger cities. Diarrhœal diseases caused hardly one fourth the mortality from this cause of October. Small-pox exists, outside of the Metropolitan centre, in Warwick, Greenburgh, and White Plains, where single cases are reported, and at Islip, where two deaths occurred. There were 955 deaths from consumption against 1070 in October; there are uniformly fewer deaths from it at this season. Acute respiratory diseases have, as usual, increased, the mortality being 1242 against 947 in October. Another return of epidemic influenza has occurred, but has not impressed itself upon the mortality of the month, though a few deaths attributed to it were reported. The death-rate for the month from all causes is 15.35 against 15.83 in October.

New York, 1,860,803: Total deaths, 2877—1015 under five years. Death-rate, 18.80. Zymotic diseases per 1000 deaths from all causes, 175.80. Deaths from consumption, 367.

For the year 1893 the Bureau of Vital Statistics reports 44,370 deaths, 16,144 marriages, and 51,516 births. The death-rate for the year was 23.46, the lowest since 1877.

Influenza was fatal in 220 cases. There were 467 deaths from cerebro-spinal meningitis, 2376 from heart disease, 585

from croup, 1569 from bronchitis, 6476 from pneumonia, 5101 from phthisis, and 2561 from Bright's disease.

There were 43 fatal sunstrokes, 1565 fatal accidents, 47 homicide cases, and 313 suicides.

The deaths under one year numbered 11,105 ; under five years, 17,872 ; sixty-five and over, 4430. Ten thousand six hundred and four deaths occurred in institutions. The total number of deaths in 1892 was 44,329, while the death-rate was 24.26.

The Health Department reports 725,244 inspections during the year. Of this number the sanitary inspectors made 52,044, and the sanitary police 260,656. The physicians of the Division of Contagious Diseases made 63,046 inspections, while the fruit and food inspectors made 165,987. Ten thousand and eighty-two inspections were made by the Division of Bacteriology and Disinfection. Tenement-house inspections numbered 61,734, and there were 1484 lodging-house inspections and 11,744 inspections of slaughter-houses. One hundred and forty-four houses were ordered vacated by the Board, 44 were declared a public nuisance ; 26,438 orders were issued in complaints, and 89,304 specimens of milk were examined ; 2,927,912 pounds of fruit and food were condemned, also 1,175,287 pounds of meat and fish ; 208,228 persons were vaccinated ; 4937 dead animals were removed from the streets.

These cases of contagious diseases were reported : Diphtheria, 6224 ; measles, 6831 ; scarlet-fever, 5637 ; small-pox, 449 ; typhoid-fever, 1010 ; and typhus-fever, 470.

Longer Isolation Required for Diphtheria.—Dr. Herman M. Biggs, Chief of the Bureau of Pathology, Bacteriology, and Disinfection, after several months' scientific observations of diphtheria and kindred diseases, sent out circulars to the medical profession in this city a few weeks ago which embodied a synopsis of his latest discoveries. In the summer Dr. Biggs by bacteriological examination discovered that more than three quarters of the cases reported as diphtheria were not true diphtheria, but a comparatively mild ailment. Not long ago his department showed not only that there was but slight difference between diphtheria and so-called membranous croup, but that the latter was infectious. Dr. Biggs's latest report shows that in a great many cases persons who have had diph-

theria continue to carry the germs of the disease in their throats for many days after all signs of the disease disappear. In 245 cases out of 405 examined, it was observed that the Loeffler bacilli disappeared within three days after all traces of the disease in the throat had disappeared. In 103 cases the bacilli were found a week afterward, in 34 cases twelve days afterward, and in 16 cases fifteen days afterward. In four instances traces of the bacilli were found after three weeks, and in three cases after five weeks. Dr. Biggs believes that the disease is spread by convalescents who mingle with others while their throat secretions still contain the bacilli.

As a result of this discovery, the Board of Health has adopted a rule that all diphtheria patients in tenements, boarding-houses, and hotels must be kept isolated until a bacteriological examination of their throat secretions shows no traces of the disease germs.

The annual report of the Morgue shows that 8169 bodies were received during the year. Of this number 5099 were adults. Bellevue Hospital contributed 1620 bodies; City Hospital, 646; Ward's Island Hospital, 406; Almshouse, 677; Insane Asylum, 266; Lunatic Asylum, 297; branch lunatic asylum on Hart's Island, 97; Workhouse, 68; Randall's Island Hospital, 86; Infants' Hospital, 506; Penitentiary, 19; Harlem Hospital, 34; Fordham Hospital, 4; Gouverneur Hospital, 60; Emergency Hospital, 24; and outdoor poor, 3322. Of the latter number, 2316 were the bodies of infants.

There were 2746 bodies claimed and buried by friends. There were 5418 burials in Potter's Field. The number of unknown dead was 169, of which 90 were buried unidentified.

Brooklyn, 978,394: Total deaths, 1350—444 under five years. Death-rate, 16.78. Zymotic diseases per 1000 deaths from all causes, 144.44. Deaths from consumption, 180.

Syracuse, 91,944: Total deaths, 126—37 under five years. Death-rate, 16.44. Zymotic diseases per 1000 deaths from all causes, 206.35. From consumption, 21.

For the year 1893 Commissioner Griffin reports that for the *eleven months* ending December 2d, the number of deaths reported was 19,504--202 more than in the corresponding period

of 1892, representing an annual death-rate of 21.49 per 1000 of the population, reckoned at 999,046. Deaths of children under five years of age, 8277 ; under one year, 5495.

The four chief causes of death were : Pneumonia, 2309 ; phthisis, 1999 ; cholera infantum, 1139 ; bronchitis, 871.

Deaths from diphtheria, 556—148 less than for the corresponding period of the previous year ; scarlet-fever, 294—85 decrease ; measles, 101—59 decrease ; whooping-cough, 246—83 increase ; croup, 241—87 decrease ; typhoid-fever, 165—13 increase ; small-pox, 11.

Contagious diseases reported : Diphtheria, 1502 ; scarlet-fever, 2771 ; measles, 2141 ; small-pox, 378 ; typhoid-fever (being declared non-contagious, is not fully reported), 205.

Birth returns numbered 19,250, exclusive of 1550 still-births ; marriages, 7350.

The Commissioner again urges attention, as he has heretofore, to the insufficiency of power in the department to promptly abate nuisances, and particularly cites the retention of old privy-vaults, for the abatement of which concurrent order of the Board of Aldermen is required. The same is true with regard to the drainage of back yards ; and reference is also made to defective ordinances in regard to stables and manure vaults, which require amendment.

Albany, 98,000 : Total deaths, 158—30 under five years. Death-rate, 19.25. Zymotic diseases per 1000 deaths from all causes, 132.90. From consumption, 20.

Buffalo, 300,000 : Total deaths, 418—141 under five years. Death-rate, 16.72. Zymotic diseases per 1000 deaths from all causes, 176.18. From consumption, 40.

Rochester, 150,000 : Total deaths, 177—28 under five years. Death-rate, 14.35. Zymotic diseases per 1000 deaths from all causes, 101.70. From consumption, 20.

The Twelfth and Thirteenth Annual Reports of the State Board of Health for 1891 and 1892, three volumes, represent a larger amount of aggressive work for the protection of the public health than for any corresponding period since the Board was organized. It consists for the most part in plans for and considerable progress made in the drainage and sewerage of unhealthful localities ; insomuch that one of the volumes of the report for 1892 wholly consists of maps and dia-

grams of such works. Besides these there are several special reports of investigations on epidemics of diphtheria at Madison, Whitehall, Cassadaga, and Salamanca. At Madison, "without finding any specially bad sanitary conditions," but attributed to contagion, and "because there had not been enough strictures in seclusion of the sick from the well and the destruction of the generated germs of the disease." At Whitehall, "arriving after a long period of immunity, originating from an imported case, existing continually with but short periods of intermission, distributed throughout the locality without local discrimination, leaves little room for doubt that the cause for its perpetuation consists in transmission from one case to another. I found a number of unsanitary conditions. The soil is uniformly clay, and the level of ground-water over most of the village site in the interspace between abrupt hills is not far below the surface. *The cellars are damp. There are numerous small ponds a few rods in extent, filled with water pretty constantly, and some of them having no visible outlet, into most of which house-drains empty, making open cesspools of them not far from dwellings. There are no sewers; and, lacking them, some house drains empty into ditches along the side of the streets.*" At Cassadaga, "eight years ago there was an extensive epidemic of this disease, fifty or more cases occurring within a radius of a few miles from the centre of the village, a number of which were fatal. Since that time cases have occasionally occurred. . . . None of the houses where there was sickness had a bad sanitary history, and they were not themselves found in bad sanitary condition. They were most of them in rather close proximity to each other. The village . . . lies at the lower end of a chain of two or three small lakelets, the outlet to which passes southward as a small and very sluggish stream, . . . bordered by a wide margin of swampy ground. . . . The bed of the stream is covered with vegetable silt, and the saturated edges of it are, much of the way, *oozing mud. The only source of pollution with animal organic matter is the waste from a cheese factory located near it; this has a drain carried to the little stream for the removal of its waste.* . . . I speak in detail regarding the stream because of a popular impression among the people of the locality that it is in some degree the source of the repeated

outbreak of diphtheria among them. . . . There is a large camp ground on the lake, a mile distant, where for a few weeks in summer 5000 people gather, and some of their sewage goes into the lakes; but this is too remote to affect Cassadaga, whatever it may effect at the camp ground itself. . . .

"It appears to me that it is now completely established that diphtheria never arises nor exists independently of a pre-existing case. The disease germs can develop in no other way. We also know that they may live many months or for an indefinite period either in a dormant state or under conditions favoring their germination and growth by constant renewal of successive generations. No germs appear to be more tenacious of life. . . . In the present case the sluggish outlet to the lake is the only public unsanitary condition. That it could cause diphtheria to develop *de novo* is certainly impossible; but whether it furnishes a suitable soil for the continuous generation of its germs is possibly worthy of consideration. *The ideal place* for this is an enclosed sewer or a damp, filthy, unventilated cellar. . . .

"I should say, therefore, that, apart from the pollution of this stream with sewage matter, that it would have nothing to do with the prolonged existence of diphtheria there. It should be cleaned out and the current run in a more narrow and direct channel; the drainage of the cheese factory referred to should also be kept out of it. Both of these things ought to be done. . . . It remains, therefore, to enforce more stringently the seclusion of the sick and the disinfection of the premises. I believe that if the regulations of this Board are strictly carried out, that this locality will be freed from the periodic recurrence of diphtheria."

At Salamanca the disease had prevailed epidemically for more than a year—since September, 1891 (the date of the inspection in 1892 not given). "Prior to the commencement of the outbreak there had been one or two cases in the course of the year, but no special prevalence since a prolonged epidemic . . . some ten or fifteen years ago. . . . Of suspected local causes there has been a popular feeling that the water supply might have been the medium for its spread. . . . This is mainly from a rapid mountain brook far up on the hills, quite beyond suspicion, and evidently a good water.

This, however, usually fails in the summer, and is supplemented by a pumping from a large well dug for the purpose in the village. This is a questionable source, being located not far from surrounding dwellings, and while it is asserted that it is supplied from the hills, there is good reason to believe that the *pump, when at work, must draw to some extent from the soil water all about it, which is certainly open to defilement. In fact, not twenty feet from it is a stable manure pile and a deep and well-filled privy pit.* . . . I learned that when there is high water *many cellars are damp and contain standing water.* This I consider one of the worst general unsanitary conditions in connection with diphtheria, and helps to perpetuate it; it furnishes a breeding-place for its disease germs if they become implanted, and it also favors catarrhs and sore throats, which render persons having them more susceptible to the disease. . . . The disposal of house and personal waste is much, as is so frequently found, blind drains and cesspools and deep privy pits seldom cleaned. . . . Absolute enforcement in detail of the State Board's regulations will suppress the epidemic. If every one sick is detected and quarantined, the germs manufactured by them totally destroyed and the soil and premises made clean, new cases of diphtheria will not occur."

The reports on diphtheria are by Dr. T. C. Curtis, Sanitary Inspector of the Board. The italics are ours; so made to emphasize attention to the local conditions described common to its continued or recurring prevalence.

There were also several inspections of localities where typhoid-fever prevailed. It seems almost unnecessary to add that it was found due to the common condition—water pollution.

And, for the first time, besides some of the investigations of unhealthful places with a view to drainage and sewerage, there has been a little aggressive work—investigations undertaken by the Board under the spur of the cholera scare—by the appointment of four inspectors-in-chief over as many divisions, into which the State has been districted, *to look for unsanitary conditions* without waiting for their results. The reports of these inspectors, however, are chiefly remarkable for their brevity.

The inspectors visited the health officers and attended meetings of the local boards of health of the respective districts to which they were assigned, and report the results of their interviews. They found all of the local boards alive to the impending danger of cholera, and discovered nothing in conflict with the descriptions they elicited. None of the towns reported upon by Dr. Curtis, where diphtheria prevailed; nor Cherry Valley, Auburn, Laurens, or the Institution for Feeble-Minded Children, at Syracuse, where typhoid-fever had recently prevailed, appears to have been inspected under this new departure.

The food and drug inspection, under Dr. Willis G. Tucker, Director of the State Laboratory, has also been considerably extended over that of previous years, though still much embarrassed by needful facilities and assistants. "New territory has been covered; a much larger number of samples collected and examined than ever before; and food articles as well as drugs collected for the first time in several years. It is believed that the work which has been done has been productive of much good, and has had an important effect, more particularly in improving the quality of the drugs sold throughout the State." Of 1283 samples examined, 623, or 48.6 per cent, were of good quality; 117, or 9.1 per cent, were of fair quality; 466, or 36.3 per cent, were of inferior quality; 37, or 2.9 per cent, were not as called for; and 40, or 3.1 per cent, were of excessive strength.

Of 515 samples of food examined, 372, or 72.2 per cent, were of good quality; 8, or 1.6 per cent, were of fair quality, and 135, or 26.2 per cent, were of inferior quality.

Of 153 samples of cream of tartar, collected from retail grocery stores, examined, 55 only, or 28 per cent, consisted of real and unadulterated cream of tartar. With the exception of 10 samples, rated as fair, in which the amount of adulteration was small, the remaining 85 samples were either largely adulterated, entirely fictitious, or consisted, in three cases, of articles wrongly sold—abundantly demonstrating the unreliability of grocers' cream of tartar—it should always be obtained from druggists.

The sanitary condition of the State and summary of mortality statistics reported during the year are, as published in abstract in THE SANITARIAN monthly, *au courant.*

New York State Commissioners in Lunacy report for the year ending September 30th, 1892, Part I., on the State System, comprehending a review of the State hospitals, of which there are, including the Asylum for Insane Criminals, 9. The number of physicians attached to them is 48 ; number of patients, 1299, and the average to each, 129.9. Annual cost per capita, $15.26. Recoveries : average on number admitted, 21.71 ; on average daily population, 9.77 ; on whole number treated, 6.81 ; on number discharged, 27.27. Deaths, 228 ; average on number admitted, 25.28 ; on average daily population, 8.53 ; on whole number treated, 6.09 ; on number discharged, 32.51. Appropriations asked for for the ensuing year, $1,426,210.79. Special reports follow on New York City and County Asylums, and Kings County Asylum ; and following these, special reports on Licensed Private Asylums.

Under the head of *Decrease of Insanity* statistics for twelve years are tabulated. According to which it appears that the last five years shows an average percentage of 4.3 per cent, while the preceding five years shows an average of 5.5 per cent—a decrease of 1.2 per cent. While these figures are not regarded as absolutely correct, they are said to be at least proximately so.

The whole number of committed and registered insane in the State on October 1st, 1892, was 17,402. Of the assigned causes of insanity, the most prolific summed up are of 9503 admitted to State hospitals : Moral causes (including domestic troubles, loss of friends, business anxieties, pecuniary difficulties, grief, fright, disappointed affections, disappointed ambition, political excitement, religious excitement, etc.), 1341 ; intemperance in drink, 911 ; general ill health, 596 ; ill health following overwork, 449 ; hereditary predisposition, 425 ; epilepsy, 408 ; old age, 307 ; masturbation, 271 ; physical disease, 211 ; climacteric, 167. The New York City and County asylums and the Kings County asylums show approximately the same preponderance.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the North Carolina Board of Health we find that during November there were 161 deaths in 24

towns, aggregating 124,254 population ; 84 were of colored people, and 49 were of children under five years of age.

The annual death-rates were 12.8 per 1000 for the white population, 19.1 for the colored population, and 15.5 for the total. There were 27 deaths from consumption, 8 from typhoid-fever, 9 from malarial fevers, and 8 from diarrhœal diseases.

Asheville, 12,000 : Total deaths, 13. Annual death-rate, 13.0 per 1000.

Charlotte, 14,000 : Total deaths, 19. Annual death-rate, 16.3 per 1000.

Raleigh, 15,000 : Total deaths, 27. Annual death-rate, 21.6 per 1000.

Wilmington, 22,000 : Total deaths, 39. Annual death-rate, 22.2 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

OKLAHOMA TERRITORY.—J. A. Overstreet, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

Philadelphia, 1,115,562 : M. Veale, Health Officer, reports :

In the four weeks ending December 30th, 1893, there were 2091 deaths, of which number 633 were under five years of age. Annual death-rate, 24.35 per 1000. Deaths from consumption numbered 228, and from zymotic diseases, 201.

Pittsburg, 264,000 : J. Guy McCandless, M.D., Registrar, reports : During the five weeks ending December 30th, 1893, there were 630 deaths, of which 223 were under five years of age. Annual death-rate, 24.63 per 1000. Zymotic diseases caused 131 deaths, and consumption, 44.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

The number of deaths recorded during November in the 22 towns and cities from which returns were received was 457 in a population of 292,931.

The annual death-rate was 18.72 per 1000, still-born included. Zymotic diseases caused 64 deaths, and consumption, 42.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of November, were: Typhoid-fever, malarial-fever, lung disease, acute *la grippe*, whooping-cough, consumption, mumps, scarlet-fever, rheumatism, and dysentery.

Chattanooga, 27,000 white and 13,000 colored: Total deaths, 35—22 of which were colored, and 16 under five years of age. Annual death-rates, 5.77 for the white population, and 20.30 for the colored, per 1000.

Memphis, 32,376 white and 25,575 colored: Total deaths, 49—14 of which were colored, and 13 under five years of age. Annual death-rates, 16.67 white, and 25.80 colored, per 1000.

Knoxville, 31,273 white and 9112 colored: Total deaths, 49—14 of which were colored, and 13 under five years of age. Annual death-rates, 13.43 white, and 18.43 colored, per 1000.

Nashville, 54,595 white, 33,159 colored: Total deaths, 123—64 of which were colored, and 44 under five years of age. Annual death-rates, 12.96 white, and 23.16 colored, per 1000.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—J. T. Reeve, M.D., Appleton.

Milwaukee, 260,000: U. O. B. Wingate, M.D., Commissioner.

During the month of December there were 431 deaths reported, 187 of which were under five years of age. The annual death-rate was 19.89 per 1000. Zymotic diseases caused 96 deaths, and consumption, 27.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 575,587: Albert B. Martinez, Director-General of Municipal Statistics.

There were 1159 deaths reported during October, 1893, of which number 535 were under five years of age. There were 90 deaths from epidemic diseases, and 116 from consumption.

A GOOD ORDINANCE.—*An Ordinance to Regulate* the Storage and Collection of Garbage and Offal.

Be it ordained by the Board of Health of the borough of Asbury Park:

SECTION 1. That all garbage and offal which shall accumulate anywhere in the borough of Asbury Park, or which is stored, kept or retained therein, shall be kept in galvanized iron receptacles.

SEC. 2. Said receptacles shall be water-tight, and they shall be kept tightly covered with a closely fitting galvanized iron cover. The capacity of said receptacles shall not exceed twenty gallons, nor shall it be less than five gallons. Said receptacles shall have metallic handles.

SEC. 3. The contents of said receptacles shall be emptied only by depositing it in vehicles licensed by the Board of Health for the transportation of garbage. The owner of each of said garbage receptacles shall cause the same to be kept clean, and no rain water nor any other fluid shall be allowed to enter said garbage receptacles.

SEC. 4. No person shall collect, transport or carry, or cause to be transported or carried through the streets of Asbury Park, any garbage or offal, nor any decomposing solid or fluid substance whatsoever, except in conformity with the require-

ments of a written permit or license therefor first received from the Board of Health.

SEC. 5. Every receptacle from which garbage is removed by any licensed collector shall be wholly and entirely emptied of its contents, and none of said contents shall be permitted to fall upon the ground. All covers of garbage receptacles shall be replaced upon said receptacles by said collectors after the garbage has been removed.

SEC. 6. In the case of fish markets, no fish refuse or other offal shall be emptied from the receptacle in which it is stored, but both offal and receptacle shall be removed from the premises and transported together outside of the borough, and the said receptacle shall not be brought back into the borough until it has been made clean and odorless.

SEC. 7. All wagons used for transporting garbage and offal shall be supplied with a box or body which is water-tight. Said wagon-boxes shall be tightly covered by wooden covers, and the covers shall be kept closed at all times except when garbage is being placed in the box. The garbage wagons shall be kept clean. The owner, contractor, or other party in charge of said wagons shall cause them to be thoroughly washed inside and outside every day, and he shall not permit them to become offensive. No garbage wagon shall be allowed to stand or remain anywhere in this borough longer than is absolutely necessary for the rapid collection of garbage. No garbage wagon shall be brought into the borough of Asbury Park nor used there unless it shall be numbered with painted figures six inches high and one inch wide, placed on both sides of its box or body. Garbage wagons shall be used singly, and they shall not be worked nearer to each other than six hundred feet in the same street.

SEC. 8. All ordinances or parts of ordinances in conflict herewith are hereby repealed in so far as they conflict with this ordinance.

SEC. 9. Any person or persons who shall violate any of the provisions of this ordinance shall, upon conviction, forfeit and pay a penalty of $25.

Adopted November 10th, 1893.

HENRY MITCHELL, *President.*

D. C. BOWEN, *Clerk.*

EDITOR'S TABLE.

SANITARIAN, FEBRUARY NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

A BUREAU OF PUBLIC HEALTH.

WHILE THE SANITARIAN has continuously advocated a national bureau or board as being in all respects preferable to a department of public health, it hopes for such a modification or amendment of the bill prepared by the Committee of the New York Academy of Medicine, recently introduced in Congress, as would be likely to create a more harmonious and effective bureau than it provides for.

It is well known to persons who were familiar with the details of the work under the whilom national board created by the Act of March 3d, 1879, that it comprised the same elements of discord and final destruction—though in minor degree—as those proposed by the bill in question. If a detail of subordinate officers, one each from the Medical Corps of the Army, Navy, and Marine Hospital Service, respectively, could not work harmoniously among themselves and with the members appointed from civil life, surely these elements of discord are greatly magnified by making the chiefs of these respective departments members of the bureau. It is but just to these officers to allege that each one of them is imbued with an *esprit de corps*, and considers the corps of which he is the chief superior to the others, and eminently to any opportunities in civic life, for acquiring sanitary knowledge and executive skill. Yet it is equally patent that there are sanitarians to be found among the physicians in civic life, from whom the other members of the bureau are to be chosen, who would not concede superior knowledge of preventive medicine to those whose opportunities have been exclusively confined to such public service.

To expect harmonious action under such circumstances is inconsistent with human nature. While this writer would yield to no one a higher respect for the *ex-officio* officers provided for in the proposed bureau, or a higher appreciation of what has been accomplished by the Medical Corps of the Army, Navy, and Marine Hospital Service in the promotion of preventive medicine, he is thoroughly convinced, from some practical knowledge in the premises, that the efficiency of a national bureau of health would be embarrassed by their membership. But it ought to and should have the benefit of their opportunities and knowledge in a consultative relation.

Indeed, every day's additional reflection to what this writer has before expressed in these pages adds strength to his suggestion that the membership of the bureau should be wholly from civic life, and yet representative of the whole country, no less completely than the representation provided for in Section 1 of the Academy of Medicine bill (our December number, p. 525), and instead of it:

To consist of seven members, chosen and appointed by the President from physicians recognized as sanitarians, one from each of the seven judicial districts of the Supreme Court of the United States, required to devote the whole of their time to the duties of their office and to do everything required of the bureau, as provided for in the proposed bill, and to be paid salaries of $5000 each.

That there shall be an Advisory Council, to consist of the Surgeon-Generals of the Army, Navy, and Marine Hospital services, and the executive officers of the State Boards of Health, who shall be required to meet with the members of the Bureau at least once annually, and as much oftener as the President may direct in the event of any emergency requiring concerted action. The members of the Council, all being salaried officers, shall only be paid their travelling expenses for attendance. All questions of law should be referred to the Law Department of the Government.

The bill should be modified to these conditions.

"VARIOLINE" is the most recent freak in the wake of *cerebrine* and other-*ines* that have led the way in the continuous effort of impostors to humbug the public. So far as we

are informed, this shade of a shadow was first brought to notice in Brooklyn.

Last October Dr. Alice Campbell issued a certificate to a child who had applied for admission to a public school, stating that he had been protected from the infection of small-pox by the varioline treatment. The principal of the school was in doubt as to whether Dr. Campbell's certificate could be considered an equivalent to a certificate of vaccination which every candidate for admission is required to furnish. He accordingly sent the certificate to Secretary Brown, of the Board of Education, to learn if it could be accepted. Mr. Brown forwarded the certificate and Mr. Martin's letter to the Board of Health for an opinion.

Health Commissioner Griffin, after considering the matter, directed Secretary Baker, of the Board of Health, to write the following letter, which was sent to Principal Martin through Secretary Brown :

Mr. George D. A. Martin, Principal Public School No. 57 :

DEAR SIR : I am directed by the Commissioner to reply to your communication inclosing a certificate from Alice Campbell, M.D., which recites " that Lester Lowerie has been protected from the infection of small-pox by the homœopathic administration of varioline in a highly potential state," and inquiring if such form can be accepted for admission of children to the public schools. Without questioning the merit of the method referred to above, he is of the opinion that it does not conform to the statutory provisions which require that every child should present a certificate of vaccination before being admitted. However, it is a matter for the Board of Education in the first instance, and their rules regulating attendance are based on that law.

Respectfully yours,
R. C. BAKER, M.D.,
Secretary.

Acting upon the Health Commissioner's opinion, the Board of Education caused a circular to be issued to the school principals directing them to accept no treatment as a substitute for vaccination.

Dr. Campbell is reported in the *Eagle* as having said that she had issued twenty-five certificates to school-children, and that they had all been accepted. When told about the circu-

lar issued by the Board of Health she became indignant, and exclaimed :

"Whose schools are they, I should like to know? Do the schools not belong to the people, and have not the people the right to say how they shall be treated? I believe that vaccination is harmful, while with varioline I obtain the most satisfactory results."

Dr. Stuart Close told the reporter that he had given over fifty certificates to school-children, stating that the varioline treatment had been given them, and all of these certificates, he declared, were accepted by the school principals.

"Varioline administered homœopathically," said Dr. Close, "complies with the law compelling vaccination if that law be rightly interpreted."

And one B. Fincke, M.D., contributed a column to the *Eagle* (January 8th) on the subject, citing as evidence against vaccination that one of Jenner's children and several other persons he had heard of died of consumption after they had been vaccinated! THE SANITARIAN published an equally pertinent case some time ago of a boy who soon after vaccination fell from a peach-tree and broke his neck!

But Dr. Fincke pursues the subject, and says :

"The principle upon which this remedy acts is the same as was intended by the Jennerian vaccination, the similarity of the cow-pox to the small-pox. But the difference turns upon the dose, which, in the claim of the Board of Education, is the clear nondescript animal poison inserted in a wound, while with the homœopathic process a few small globules of a high potency (900 centesimal) are placed on the tongue. The old arguments about the homœopathic principle and its infinitesimal doses or high potencies come too late at the end of this century, and only show that ignorance which can claim no attention from those who know. The general paternal protection on the part of the vaccinators is hardly in keeping with the acknowledged principles of self-government, and it is to be hoped that the Board of Education will not continue to make itself the cat's-paw of an unrelenting school of medicine."

But it is gratifying to know that the homœopathic physicians, as a body, do not endorse this shadow—that they have disowned it by a resolution, in society assembled.

Moreover, in a communication to the newspapers, Dr. Jerome Walker, Lecturer on Physiology and Hygiene in the

Brooklyn High School and the vaccinator employed by the Board of Education, reports having visited, in quest of information, two of the best-known homœopathic physicians of this city. They both agree that its use is not homœopathic, as there have been no provings as far as they know upon well people, though it is believed in by some of the extremists in their branch of the medical profession. Personally they are not willing to accept varioline as a substitute for vaccination until there is more proof than has yet been furnished of its efficacy. Referring to its advocates, he said: "It is folly to rail against the Board of Education for insisting upon vaccination, for Section 200, Chapter 664 of the Laws of the State of New York distinctly states: 'No child or person not vaccinated shall be admitted or received into any of the public schools of the State, and the trustees or other officers having the charge, management, or control of such schools shall cause this provision of the law to be enforced. They may adopt a resolution excluding such children and persons not vaccinated from such school until vaccinated.'"

CLIMATE AT THE POLES.—In connection with the announcement that the South Pole is to be rescued from its obscurity, and that Dr. F. A. Cook, who was with Lieutenant Peary in the eventful cruise of the *Kite* in 1891 as ethnologist, is to command the South Pole exploration, it is interesting to consider the theory that has been advanced to account for the expected open seas at the poles. It is urged, on plausibly quasi-scientific grounds, that the poles may be in reality as warm as or warmer than the tropics, the form of the earth being an oblate spheroid, or, as the geographies put it, "slightly flattened at the poles." The argument is, that any depression of the earth's surface brings it nearer the molten centre, and hence makes it warmer. Every one is familiar with the increase in temperature noticed in the sinking of mining-shafts or the driving of artesian wells. In many mines it has been found to average 1° for every sixty or seventy feet. If a difference is so noticeable in the matter of a thousand feet or more, what would it be where the downward recession is measured by miles?—and at least thirteen miles mark the variance between the earth's polar and equatorial

semi-diameters. May not that fantastic story, "A Strange Manuscript Found in a Copper Cylinder," perhaps have a basis of fact after all, and a new and wonderful race, in a delightful summer climate, be discoverable at the end of the earth's axis, when once the mighty ice-barrier is successfully passed? Let the world wish full success to Lieutenant Peary, to Dr. Cook, and the rest of the zealous explorers, in their sturdy efforts, cherishing a vague, if somewhat cynical hope that great discoveries may result.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

AN AMERICAN TEXT-BOOK OF GYNECOLOGY, MEDICAL AND SURGICAL. For the use of students and practitioners. By Henry T. Byford, M.D.; John M. Baldy, M.D.; Edwin Cragin, M.D.; J. H. Etheridge, M.D.; William Goodell, M.D.; Howard A. Kelly, M.D.; Florian Krug, M.D.; E. E. Montgomery, M.D.; William R. Pryor, M.D.; George M. Tuttle, M.D. Edited by J. M. BALDY, M.D. Royal 8vo, with 360 illustrations in text and 37 colored and half-tone plates. Price, cloth, $6; sheep, $7; half Russia, $8. Philadelphia: W. B. Saunders.

A remarkable work for the distinguished array of authorship, at once calculated to command the attention of experienced physicians as well as students. It is thoroughly practical for both in its teachings as a working text-book for students, and for its comprehensiveness of detail, without redundancy, of the most authoritative knowledge of the subject.

The subject-matter is classified and brought fully up to date at every point under the following heads: Examination of the Female Pelvic Organs; Technique of Gynecological Examination; Menstruation and its Anomalies; Sterility;

Anomalies of the Female Generative Organs; Genital Tuberculosis; Diseases of the Vulva and Vagina; Inflammatory Diseases of the Uterus; Laceration of the Soft Parts; Genital Fistulæ; Distortions and Malpositions; Malignant Diseases of the Female Genitalia; Uterine Neoplasms; Pelvic Inflammation; Ectopic Gestation; Diseases of the Ovaries and Tubes; Diseases of the Urethra, Bladder, and Ureters, and After-Treatment in Gynecological Operations.

A clear line of treatment has been laid down in every case; and although no attempt is made to discuss mooted points, still the most important of these have been noted and explained; and the operations recommended are fully illustrated, so that the reader may have a picture of the procedure described in the text under his eye, and cannot fail to grasp the idea.

The publisher's part is equally well done. The work is well illustrated throughout with woodcuts, half-tone and colored plates, mostly original, and selected from the author's private collection; the paper and type excellent, and the binding faultless.

A MANUAL OF PRACTICAL ASSAYING. By H. VAN F. FURMAN, E.M., Late Chemist and Assayer of the Germania Lead Works, Salt Lake City, Utah; Late Chemist and Assistant Metallurgist of the Rio Grande Smelting Works, Socorro, N. M.; Late Chemist of the Globe Smelting and Refining Co., Denver, Col.; Member of the American Institute of Mining Engineers; Member of the Colorado Scientific Society, etc. 8vo, pp. 396. Price, $3. New York: John Wiley & Sons.

This systematic and comprehensive work appears to be the outcome of a series of articles published three years ago in the *Mining Industry* of Denver, by the author, entitled "Notes on Technical Chemical Analyses." The favor with which those articles were received has been the author's inducement to their republication, though re-written, in this book, and much new matter added, embracing all the new technical methods which have been introduced and proved trustworthy since the publication of the series referred to, as well as many determinations not described there.

Greatest prominence has been given to the rapid methods in vogue in the technical laboratories of the United States, supplemented by a detailed description of some of the longer and more exact ones.

Although the plan of the work presupposes a knowledge of the general principles of chemistry, the endeavor has been to present the methods in a form that those having but a more limited experience in analytical chemistry could successfully perform the operations.

The work is divided into four parts: First, introductory—sampling, preliminary examinations, apparatus and operations, and reagents; second, determinations; third, special assays and analyses; and fourth, calculations.

Chapter III. of Part IV., on the calculation of lead-blast furnace charges, while not strictly within the scope of a work of the present nature, the author remarks prefatorily, was included to illustrate the practical application of the principles of stoichiometry and chemistry to metallurgy.

Reference has been made by footnotes to the original sources of information.

HOW TO USE THE FORCEPS. With an Introductory Account of the Female Pelvis and of the Mechanics of Delivery. By HENRY G. LANDIS, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in Starling Medical College, Columbus, O. Revised and enlarged by CHARLES H. BUSHONG, M.D., Assistant Gynecologist and Pathologist to Demilt Dispensary, New York. Illustrated. Price, $1.75. New York: E. B. Treat.

Knowledge of the mechanism of labor, which the book teaches, is essential to all medical students who would safely practise. How to use the forceps is secondary to such knowledge; but unfortunately they are more likely to be resorted to by those who are deficient in knowledge of the mechanism of labor than by those possessed of such knowledge, and with correspondingly fatal consequences.

The book before us begins with the anatomy of the pelvis, and with appropriate cuts illustrates the mechanism of labor in all positions. Next follows a description of forceps, and how to apply them. It concludes with a chapter on illustrative

cases. Altogether, it is an excellent book for medical students. And it is a pity that the first portion of it—on the Anatomy of the Pelvis and the Mechanism of Labor—was not made up separately, or else that some one does not make such a book specially for *midwives*. For while such knowledge is required of all medical students before they are permitted to practise, thousands of midwives are permitted to register and practise throughout the country though wholly devoid of such knowledge, and with the result of enormously adding to the list of "still-births" and infant mortality.

NERVOUS EXHAUSTION (NEURASTHENIA), ITS SYMPTOMS, NATURE, SEQUENCES, AND TREATMENT. By the late GEORGE M. BEARD, A.M., M.D. Edited, with notes and additions, by A. D. ROCKWELL, A.M., M.D., Professor of Electro-Therapeutics in the New York Post-Graduate Medical School and Hospital; Fellow of the New York Academy of Medicine; Member of the American Neurological Association; of the New York Neurological Society, etc. Third edition, enlarged. Price, $2.75. New York: E. B. Treat.

The subject of this book, so appropriately called *neurasthenia* by Dr. Beard in his first treatise on the subject, fourteen years ago, is displayed in so many phases, under such terms as "general debility," "nervous prostration," "nervous debility," "nervous æsthenia; "spinal weakness," etc., suggested by its symptoms, that the author of this latest edition prefatorily refers to it as the Central Africa of medicine—an unexplored territory into which few men enter, and those few have been compelled to bring reports that have been neither credited nor comprehended. His effort is to collate and systematize what others have written, and his own observations as a colleague of Dr. Beard and since, so as to render its diagnosis less doubtful and its treatment more successful. To this end, it is a valuable contribution to the medical literature of an exceedingly complicated series of nervous disorders, and thoroughly commendable to all physicians.

BENJAMIN FRANKLIN AND THE UNIVERSITY OF PENNSYLVANIA, edited by FRANCIS NEWTON THORNE, Ph.D., Professor of American Constitutional History in the University

of Pennsylvania, is a *Circular of Information* (No. 2, 1892), emanating from the Bureau of Education, Washington, D. C.

Prefatorily, reference is made to a similar circular, issued from the Bureau on Thomas Jefferson and the University of Virginia, of which an edition of 20,000 copies was published and distributed, and for which there is a continued demand, insomuch that it is contemplated to reprint it. The present circular will doubtless awaken like interest; for, as remarked, while Thomas Jefferson, with that breadth of statesmanship which characterized all of his labors, kept unceasingly before his view the importance of popular education to re-enforce and make effective the operations of the principle of local self-government, Dr. Franklin, on the other hand, himself a noteworthy example of a self-educated man, kept in view the importance of education as the foundation of thrift and social development. These two men seem to have furnished more than any other two men the guiding principles which have prevailed in our civilization, political and social; and the Bureau of Education in this tribute to Franklin, as to Jefferson, pays even a greater tribute to the educational sense of America in the issue of these publications as an educational force.

THE NEW YORK COUNTY MEDICAL ASSOCIATION, founded in 1884, on the same basis as the State Association, with which it is affiliated, has issued an independent directory comprising a list of members, the decision of the American Medical Association, in regard to the qualifications of membership and representation in that body, and the reports of the committee of the American Medical Association on the Codes of Ethics for 1892 and 1893. Appended is a directory of other Regular Physicians resident in the County of New York *not* members of the County Medical Association. The total membership of the association on June 30th, 1893, was 920.

THE YEAR BOOK OF THE SOCIETY OF ENGINEERS. University of Minnesota: Minneapolis.

A substantial pamphlet of one hundred and twenty pages, containing twenty papers of interest and practical utility to all engineers and to other persons who would benefit by knowl-

edge of "The Commonwealth and the College," "Electricity in Agriculture," "Steam Boiler Explosions," "Precise Levelling," "Technical Education and its Relations to Mining and Metallurgical Interests," "The Operation of Electric Street Railway Motors," and a dozen other equally interesting subjects, several of them illustrated by diagrams, and some admirable pen-and-ink renderings.

Quarterly Bulletin of the University of Minnesota. The first number, May 28th, 1892, subscription price, $1 a year, Minneapolis, is an interesting beginning of a useful abstract of university studies, with experimental researches on such topics as "The Outlook for Athletics," "Research Work in Electrical Engineering," "Origin of the Red Blood Corpuscles," "Experiments on the Digestibility of Food and the Composition of Wheat," "The Inarticulate Mind and the Idea of Time," etc.

THE BIRDS OF NORTH AMERICA.—This most magnificent illustrated work ever placed before the public for lovers of the beautiful in nature and art has been issued under the auspices of The Natural Science Association of America, 114 Fifth Avenue, New York. An association supported entirely by voluntary contributions in carrying out its object: "To disseminate and promote natural science information among the people."

This superb work contains one hundred and nineteen artistically engraved plates, on which are represented all our birds, in their various colors of plumage, and botanical surroundings, true to nature. The systematic table, arranged according to the classifications adopted by the American Ornithologists' Union, includes all the additions and corrections of our North American species which have been made to date, with an index to page, plate and figure of each species according to the American Ornithologists' Union number. The text gives a clear and interesting account of their habits and characteristics—followed by an alphabetical arrangement of the common and scientific names, with an index to page, plate, and figure of each species represented. Natural Science Association, 114 Fifth Avenue, New York.

HOW SHALL WE MAKE OUR HOMES HEALTHY? By

BENJAMIN J. PORTUGALOFF, M.D. Translated from the Russian. Price, 25 cents. Chicago, Ill.

A pamphlet of eight pages and a folded illustration descriptive of a crematory apparatus and how to use it.

DESCRIPTION OF A NEW REVISED SANITARY BUILDING. By J. VAN DER HEYDEN, M.D., Yokohama, Japan.

An illustrated pamphlet of twenty pages on effective ventilation under the most trying conditions of excessive heat or cold, with the fire so arranged that in winter all the air admitted has to pass it, where all organic matter in it is destroyed; and in summer, catches are put up in the heating belt, where the air in passing must deposit its impurities before escaping in the surrounding space. An ingenious but complicated contrivance, and unattested by recorded observations of the results.

JAMAICA AT THE COLUMBIAN EXPOSITION. Compiled under the direction of Lieutenant-Colonel C. J. WARD, Honorary Commissioner. New York: William J. Pell, 92 John Street.

This is a beautifully illustrated book, giving a descriptive account of the attractions of Jamaica as a health resort, together with statistical information on the population and products.

COCA, AND ITS THERAPEUTICAL APPLICATION. By ANGELO MARIANI. New York: J. N. Jaros, 52 West Fifteenth Street.

An illustrated description of the plant *Erythroxylon Coca*, together with an account of its use by the Peruvian Indians and others, where the plant grows; the preparation of wine and *cocaine* from its leaves, and the extensive application of these preparations in the treatment of disease; the most complete description of the natural history and the therapeutical properties of coca and its preparations of which we have knowledge.

BELLADONNA is the title of an illustrated pamphlet describing belladona, its medicinal properties, and the numerous

preparations of it and its alkaloids, adapted to the requirements of all physicians, by the Messrs. Johnson & Johnson, manufacturing chemists, New Brunswick, N. J.

COLUMBUS OUTDONE is the title of a well-illustrated book of 200 pages, recording the adventures of Captain William A. Andrews in his trip across the ocean in a boat 14½ feet long, and aptly called the *Sapolio*, because she "scoured the seas!" The preface claims that "the example of intelligent daring is never lost on the world," and that four fifths of the so-called dangers of life are trifles if met with courage, resolution, and common sense." Price, $1. Artemas Ward, 11 East Fourteenth Street, New York.

NOTES AND NOTICES.

SOUP HOUSES AND CHARITABLE BAKERIES for the gratuitous distribution of food is the first impulse of many kind-hearted people; but experience proves that the injury outweighs the benefit. It may, however, be safe and wise to establish soup kitchens and cheap restaurants, where nutritious food can be sold at cost. The relief committees might establish such kitchens, in connection with their industries, and pay for their work in orders for food.—*From "Relief Work—Its Principles and Methods," by Washington Gladden, in the January Review of Reviews.*

MILITARY DRILL IN SCHOOLS AND COLLEGES.—Ex-President Harrison writes an Open Letter in the January *Century* on the subject of military instruction in schools and colleges, as suggested recently in a series of resolutions passed by Lafayette Post (G. A. R.) of New York. He says:

"I very well remember how hard it was for me to learn which was the right of the company, and to understand why it continued to be the right when the right about had made it the left; and how we had, in 1862, to send to a distant city to find a drill-master competent to instruct the company officers, not one of whom could go through the manual of arms; and how the regiment, after a few half-learned lessons in the company drill, was sent to the seat of war with

guns which they had never loaded or fired. Fortunately the men had the American adaptability and quickness, and our adversary only a little better preparation. It will not be safe to allow war to come upon us again in that state, for war's pace has greatly quickened, and the arms of precision now in use call for a trained soldier. Under our system we will never have a large standing army, and our strength and safety are in a general dissemination of military knowledge and training among the people. What the man and citizen ought to know in order to the full discharge of his duty to his country should be imparted to the boy. Nothing will so much aid to enlarge our State militia, and to give it efficiency and character, as the plan proposed. The military taste and training acquired in the school will carry our best young men into the militia organizations, and make those organizations reliable conservators of public order, and ready and competent defenders of the national honor."

THE BREAD-AND-BUTTER QUESTION, by Junius Henri Browne, is the subject of a very practical paper in the January *Harper's Magazine*, in which the writer shows the character of the struggle by professional men for the comforts of life, as follows:

"Take New York, the commercial capital, the financial centre of the Western hemisphere, as an example of the nation's money-making. The principal diversion of its citizens is vulgarly presumed to be getting rich. Actually it contains, in proportion to its inhabitants, more poverty, and of a worse kind, than any city on this continent. Fully a third of its people live in tenement-houses, and their condition is, in the main, deplorable. But, as they are nearly all illiterate and foreigners by birth or extraction, they are not to be considered, since this article refers to Americans generally, and to those comprehended in the intelligent, educated class. Of these more than two-thirds are probably dependent on salaries, hence can have no ambition beyond bread and butter, and many of them by no means fastidious in regard to the butter. An excess of one half of the remaining third—really less than a third—are presumably small tradesmen, who must be satisfied if they earn a decent living; for the bulk of them

certainly do not. A few may be enabled to save something, but it would be insignificant, at its largest, to any one of the mildest financial aspirations. This would leave not quite a sixth for merchants, bankers, professional men, artists, and those supposed to be in independent positions, if not in independent circumstances. How many of these are lifted above the bread-and-butter question? Precious few.

"After all the babble about the enormous wealth of the metropolis, there are not, by a very liberal estimate, more than five hundred millionaires proper within its entire boundaries. And while the capitalists may be enumerated by the thousands, there are tens and tens of thousands of educated men and women who are pitifully paid. Considering the cost of living there, it is one of the least desirable towns in the Union for a person of ordinary income or earning power to choose as a place of residence; and hence, paradoxically enough, it is forever overcrowded.

"A common saying in the republic is, 'Anybody can get a living,' but it is disproved by the patent fact that a great many of us do not get a living, and are not able to, try as we may. What a very large proportion of us are always requiring assistance of some sort! how very few can stand alone permanently! And to get a living in America, of an American kind, is far more of a task than is popularly supposed."

DINNERS AND DINNERS, a paper by Lady June, in the *North American Review* for January, is alike admirable for its suggestions of wholesomeness, etiquette, and economy. "No dinner," she writes, "should consist of more than eight dishes —viz., soup, fish, *entrée*, joint, game, sweet *hors-d'œuvre*, and perhaps an ice; but each dish should be perfect of its kind, and no dinner should last more than an hour and a quarter if properly served. Instead of this, dinners are constantly two hours long, and we double the quantity of food. Can anything be more wearisome, tiring to the digestion, and wearing to one's self and one's neighbors than two hours' conversation with no chance to escape, without even the privilege, if one is bored, of being silent? Even the greatest wit, the most brilliant *raconteur*, becomes monotonous after such a trial. Nothing can be in worse taste and more wearisome

than a long and heavy repast which is served with great ostentation, and where the guests are made to feel that their duty is to direct time and energy to the sole task of getting through and tasting each dish that is brought to them.

"A really pleasant dinner party ought never to be a very large one. . . . The golden rule of hospitality should be always to return the civility of others, and one should not dine at the house of any person whom one does not intend to invite in return."

SANITARY INSURANCE: A SCHEME, by G. Walter Steeves, M.D., contains some excellent suggestions, but to any one familiar with the work of the Sanitary Protective Association of Newport, R. I., organized fifteen years ago, and similar associations in Linn, Savannah, and some other American cities, they are far from being novel, and somewhat surprising considering their source; for we are accustomed to expect from Englishmen who write on such subjects improvements upon what has been devised and written upon by others. But the benefits of such an association are very clearly set forth notwithstanding that the writer was evidently unacquainted with the American precedents.

It is proposed that any city or district may organize for itself a sanitary protective and insurance association, founded for the purpose of providing the public with a source of protection against unsanitary dwellings and surroundings, and a medium for supplying sanitary advice. The definite objects would be:

1. To examine into the sanitary condition of any building previous to tenancy, or after, and of affording skilled advice on sanitary matters or appliances, either on existing premises or on the plans of proposed arrangements of new buildings.

2. To issue certificates respecting the sanitary condition of dwelling-houses and buildings.

3. To provide the means by which a cleanly and wholesome state of the sanitary arrangements of a house would be maintained.

4. The sanitary registration of dwellings.

5. The insurance of buildings against a defective sanitary condition.—*Nineteenth Century.*

NATURAL SANITARY AGENTS.—There is no more effective sanitary agent than fire. The ancient who made his napkin of asbestos had but to throw it into the fire when soiled, and it could not be made cleaner. And could we but build our houses of incombustible materials the spring cleaning might be efficiently accomplished by incendiarism. London, indeed, was purified from a plague by a general conflagration. And almost the one thing which that nearly indestructible disease germ, the bacillus, cannot stand is heat.

But if heat is a great purifier, cold is no less a preserver from decay. Amid the eternal snows of the arctic regions the unburied carcass may lie fresh and uncorrupt for months; the flesh of the mammoth, buried in the frozen soil of Siberia, has resisted decay for untold centuries. And here, perhaps, we have one of "nature's hints to inventors," for meat is now largely preserved by freezing.

Electricity is also a sanitary agent. When Professor Tyndall was experimenting with atmospheric dust in his classical researches on the origin of the lowest forms of life, he found that an electric discharge passed through a dusty atmosphere purified it, by causing the minute particles to settle. And long before these researches it was commonly said and believed that a thunderstorm purified the air. Thus a scientific foundation is found for the popular belief, and the lightning flash takes its place as an accredited sanitary agent.—*Chambers's Journal.*

THE PARIS CHOLERA CONFERENCE.—The President has appointed Dr. Stephen Smith, of New York, Dr. Edward O. Shakespeare, of Philadelphia, and Dr. Preston H. Bailhache, of the Marine Hospital Service, as delegates to the approaching Paris conference regarding the international relations of Asiatic cholera. This movement is under the auspices of the French Government, and is spoken of as the International Sanitary Commission of 1894. Each of the great powers of the civilized world has received an invitation to be represented by three delegates. The first session will be held on January 24th.

THE INTERNATIONAL MEDICAL CONGRESS.—The undersigned chairman of the American National Committee of the

International Medical Congress, which was postponed from September 24th on account of cholera prevailing in Italy, has been notified by the Secretary-General that the Congress will be held at Rome from March 29th to April 5th, 1894.

A letter of the Secretary-General's, dated November 29th, informs me that "travelling documents" will be sent to the address of every subscriber on or before February 15th, 1894; and that after that date congressists will have to apply to the undersigned.

It also contains the following regulations of former circulars:

Members' dues are $5 (money order to Professor L. Pagliani, Rome); guests' (wives and adult relations), $2; medical students, no fees. All are entitled to travelling documents.

Reductions on the Italian railways are available from March 1st until April 30th.

With regard to papers:

First. Papers to be read in any of the sections of the Congress should be announced on or before January 31st, 1894, to the Secretary-General, Professor E. Maragliano, Ospedale Pammatone, Geneva, Italy.

Second. The title of the paper ought to be accompanied with a brief abstract of its contents and conclusions.

Third. The programme to be distributed will contain the titles of all the papers announced before August 31st, 1893, and since.

Fourth. The reductions granted by the railway companies months ago will be available from March 1st to April 30th, 1894.

In the interest of such medical men as will sail for Europe before official cards will have been received from the General Committee, the undersigned proposes to supply in as official a form as he thinks he is justified in doing, credentials which are expected to be of some practical value. It is suggested, besides, that a passport may increase the traveller's facilities.

Very respectfully,

A. JACOBI, M.D.

110 WEST THIRTY-FOURTH STREET, NEW YORK, December 10, 1893.

REWARDS FOR MERITORIOUS DISCOVERIES AND INVENTIONS.

The attention of ingenious men and women is directed to the fact that the *Franklin Institute* of the State of Pennsylvania for the Promotion of the Mechanic Arts may grant, or recommend the grant of, certain medals for meritorious discoveries and inventions which contribute to the promotion of the arts and manufactures.

The character and conditions of these awards are briefly stated in the following:

The Elliott Cresson Medal, founded in 1848 by the gift of the late Elliott Cresson. This medal is of gold, and by the terms of the deed of trust may be granted for some discovery in the arts and sciences, or for the invention or improvement of some useful machine, or for some new process, or combination of materials in manufactures, or for ingenuity, skill, or perfection in workmanship.

The John Scott Legacy Premium and Medal ($20 and a medal of bronze), awarded by the city of Philadelphia. This medal was founded in 1816 by John Scott, a merchant of Edinburgh, Scotland, who bequeathed to the city of Philadelphia a considerable sum of money, the interest of which should be devoted to rewarding ingenious men and women who make useful inventions. The premium is not to exceed $20, and the medal is to be of copper, and inscribed "To the most deserving."

The control of the Scott Legacy Premium and Medal (by Act of the Ordinance of Councils in 1869) passed to the Board of Directors of City Trusts, and has been referred by the Board to its Committee on Minor Trusts, and that Committee has resolved that it will receive favorably the name of any person whom the Franklin Institute may from time to time report to the Committee on Minor Trusts as worthy to receive the Scott Legacy Premium and Medal.

The Edward Longstreth Medal of Merit, founded in 1889, by Edward Longstreth, machinist, and late member of the Baldwin Locomotive Works. This medal is of silver, and may be awarded for useful invention, important discovery, and meritorious work in or contributions to science or the industrial arts.

Full directions as to the manner and form in which applications for the investigation of inventions and discoveries should properly be made will be sent to interested parties on application to William H. Wahl, Secretary, Franklin Institute, Philadelphia, Pa.

PUBLICATIONS RECEIVED.

Epilepsy, Some Successful Results in the Treatment of, 5 pages. David Inglis, M.D., Detroit, Mich.

Hip-Joint Disease in Young Children, Importance of Early Mechanical Treatment, 8 pages. A. E. Hoadley, M.D., Chicago.

Meaning and Method of Life, 7 pages. George M. Gould, A.M., M.D., Philadelphia.

Medical Press, The, 12 pages. *Ibid.*

Medical Words, The Spelling of Some, 8 pages. *Ibid.*

Mediastino-Pericarditis in a Child, 6 pages. William A. Edwards, M.D., San Diego, Cal.

Mortality, Apparent and Actual, 26 pages. F. D. Bullard, A.M., M.D., Los Angeles, Cal.

Narcotic Habitués: Etiology of Narcotic Inebriety, 4 pages;

Cocaine Poisoning, 4 pages;

Cocaine Inebriety, 24 pages;

Twenty-seven Years Addiction to Opium—Recovery—Relapse, 4 pages; and

Trional, the New Hypnotic, its Use in Narcotic Habitués, 4 pages;

The Mattison Method of Morphinism, 13 pages. J. B. Mattison, M.D., Medical Director, Brooklyn Home for Habitués, Brooklyn, N. Y.

Rumford Kitchen Leaflets. Exhibit of the New England Kitchen (142 Pleasant Street, Boston, Mass.) at the World's Columbian Exposition, Chicago.

Scarlet-fever, the Control of. Mr. J. G. Orton. Prize Essay, 7 pages. F. W. Higgins, M.D., Cortland, N. Y.

Syphilis: Is it Caused by any known Bacteria? 5 pages. Charles C. Currier, M.D., New York.

Varicocele, 4 pages. B. Merrill Ricketts, M.D., Cincinnati, O.

Water: Amount of Oxygen contained in Ponds and Reservoirs at Different Depths in Winter, under the Ice, 9 pages;

Mineral Contents of some Natural Waters in Massachusetts, 8 pages ;

Interpretation of Water Analysis, 11 pages ;

Purification of Water by Freezing, 6 pages. Thomas M. Drown, Analytical Chemist, Massachusetts Institute of Technology, Boston, Mass.

Notes of a Case of Cancer of the Uterus. Daniel Lewis, M.D., New York.

Menstruation in the Physical Diagnosis of Pulmonary Phthisis. George A. Evans, M.D., Brooklyn, N. Y.

Dakota for Health Seekers. D. W. Robinson, M.D., Pierre, S. D.

Habits of Posture as a Cause of Deformity and Displacement of the Uterus. Eliza M. Mosher, M.D., Brooklyn, N. Y.

Laryngeal Neoplasms. Robert Levy, M.D., Chicago, Ill.

Infectious Appendicitis. Robert T. Morris, M.D., New York.

Results of Aseptic Celiotomy. William H. Mattieu, A.M., M.D., Louisville, Ky.

Remarks on the Writings of Loyse Bourgeois. Hunter Robb, M.D., Baltimore, Md.

Coles Fracture. E. H. Woolsey, M.D., Oakland, Cal.

The Widening Use of Compressed Air. Whitfield Price Pressinger, New York.

Treatment of Dysmenorrhœa. J. H. Musser, M.D., Philadelphia.

Gastro-Cholecystotomy : Specimens Demonstrating the Operation. B. Merrill Ricketts, M.D., Cincinnati, O.

Notes on the Summer Diseases of the Gastro-Intestinal Tract. J. H. Musser, M.D., Philadelphia.

Gold in Therapy. E. A. Wood, M.D., Syracuse, N. Y.

Lupus ; its Extirpation. B. Merrill Ricketts, M.D., Cincinnati, O.

External Urethrotomy. *Ibid.*

Report on Nasal Surgery. M. T. Coomes, A.M., M.D., Louisville, Ky.

The Pneumatic Calinet in the Treatment of Pulmonary Phthisis. C. E. Quimby, A.M., M.D., New York.

Perityphlitis. F. C. Schaffer, M.D., Chicago, Ill.

THE SANITARIAN.

MARCH, 1894

NUMBER 292.

AGGRESSIVE SANITATION.

REPORT OF THE COMMITTEE ON HYGIENE OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK FOR 1893.

1. THE Exclusion of Cholera.
2. Care of the Insane.
3. Prevention of Tuberculosis.
4. Bacterial Culture for Diagnosis of Diphtheria.
5. District Hospitals for Infectious and Contagious Diseases.

THE EXCLUSION OF CHOLERA.

At the beginning of the cold season in Europe last year (1892) the prediction was made by persons familiar with the history of cholera epidemics, that in the warm season of this year (1893) the disease would be found in all parts of Europe, and there was a general expectation on the part of sanitary authorities that it would enter this country and considerably increase the death-rate in our cities. Although the epidemic at Hamburg had run its course and there had been no serious outbreak in any other part of Western Europe, yet it was known that the plague lingered in those parts of Russia where the inhabitants had fallen into a condition of destitution and were weakened by other prevailing diseases. Throughout the winter certain provinces of Russia continued to be infected. With the coming of spring the disease began to move westward again, and the early appearance of it upon the coast of France excited much alarm.

It became necessary for our Government to take new precautions for the exclusion of cholera. The memorable experi-

ence of the quarantine officers at this port in the autumn had shown that emigrants had been shipped from European ports, when these were infected, under conditions which were very favorable to the development of the disease on board ship during the voyage. Our quarantine authorities had been successful in confining the disease to the quarantine islands; but it was seen that the danger to which this country was exposed would be minimized if the quarantine work should be done on the other side of the Atlantic. Our Government undertook, through the agency of the Marine Hospital Bureau, to cause the shipment of emigrants to be made at the ports of departure under the conditions and all the precautions suggested by modern sanitary science.

In each of the leading European ports was stationed a surgeon of the Marine Hospital Service, whose duty it was to supply information to the head of the Bureau, Dr. Wyman, concerning the progress of the disease and the sanitary condition of the ports; to supervise the shipment of emigrants; to enforce the rules of the Bureau with respect to disinfection and the confinement of emigrants under sanitary observation for a certain number of days before their departure; to give or to withhold bills of health, and generally to take all possible precautions that could prevent the transportation of infected passengers or baggage to this country. It was not impossible to compel obedience in a foreign land to the rules of the Bureau at Washington, for steamship companies could easily be punished for disobedience. It should be said, however, that nearly all of the companies engaged in transporting emigrants not only submitted cheerfully to the restrictions imposed, but also assisted the agents of the Bureau in their work.

It has from time to time been pointed out what these representatives of the Marine Hospital Bureau were doing at Hamburg, Naples, Genoa, Antwerp, Glasgow, and elsewhere. Their labors have been of great value to the people of this country, and in some instances to the people of Europe. It will be recalled that the presence of cholera in Naples was first made known to the world by the Bureau's inspector at that port (Dr. Young), and that for two weeks after the announcement the authorities of the city and the diplomatic representatives of Italy in other countries sought diligently by denials

to conceal the truth which he had disclosed. In this case all Europe was under obligations to the American inspector. It was due to his reports and recommendations that immigration from Naples was suspended ; and it is quite probable that if we had had no sanitary agent in that city, the quarantine authorities at this port would have had an experience not less disagreeable and dangerous than that of 1892. It is true that one infected ship (the *Karamania*) did arrive in this harbor ; but at the time of her departure from Naples there had been only two or three cases of cholera in the city, and these had been concealed by the authorities. Moreover, it was only with the greatest difficulty, owing to the attitude of the city authorities and the unwillingness or inability of the steamship companies to assist the inspector, that provision was made at that port for the isolation of emigrants under observation for a few days before their departure. At a later date another infected steamer (the *Russia*) came across from Hamburg ; but the number of cases on board was small, and the disease was easily suppressed. In this instance the cause of infection appears to have been an accidental and temporary pollution of the Hamburg water supply.

We have reviewed briefly at this time the work of the Bureau's representatives in foreign ports because they are now to return to this country. In the opinion of Dr. Wyman the time of danger is past, and these agents can safely be recalled. The Bureau will continue to be represented, however, in Paris, Berlin, Naples, and London by agents who will be on guard. But the retention of agents at all ports of departure is no longer required. The practical value of the new system has been clearly demonstrated, and both the Marine Hospital Bureau and the competent and faithful gentlemen who have represented it in Europe deserve the thanks of the American people. We have been speaking only of the work done in foreign ports ; but those who appreciate the value of the safeguards interposed there by the general Government will not overlook the labors of Health Officer Jenkins and his assistants in the quarantine service of the port of New York, who have had to deal with the enemy at the very gates, and who have shown this year once more their ability to make ample defence at the point where the danger of invasion is greatest.

New Quarantine Regulations.—The Treasury Department has recently issued a new order, based upon the act of February 15th, 1893, which grants additional powers to the Marine Hospital Service. The first article of the regulations provides for the inspection of all vessels from domestic ports where yellow-fever, cholera, typhus-fever, or small-pox is prevailing. The new regulations authorize the Supervising Surgeon-General from time to time personally, or through a duly detailed officer, to inspect the maritime quarantines of the United States, State and local as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Treasury Department have been or are being complied with. The officers are authorized to board any incoming vessel, or any vessel detained at quarantine, and to examine all portions of the quarantine establishment for this purpose, with a view to certify, if need be, that the regulations are being enforced.

Superintendent Kimball, of the Life-Saving Service, issued an important circular-letter, September 4th, 1893, to all keepers of life-saving stations on the Atlantic seaboard, and especially to those in and about New York. The circular instructs the officials of the Life Saving Service to co-operate with the officers of the Marine Hospital Service in preserving a strict quarantine on infected ships. To this end the surfmen are instructed to keep a close lookout for all matter, such as bedding, clothes, vegetable matter, etc., which may wash ashore. This matter they are directed to handle with rakes only, and to dry and burn it. They are also instructed to see that no persons who may escape from ships detained at Quarantine are permitted to land. In a general way, the Life-Saving Service will assist all in its power to maintain rigid quarantine when it is established, so as to lessen the chances of infection to this country through the means of diseased household articles.

CARE OF THE INSANE.

The philanthropic men and women who, by years of agitation, destroyed the inhuman system of imprisoning hundreds of the insane poor of the State in county almshouses, will be glad to know that the "State care" system is now in success-

ful operation. All of the insane poor in the county almshouses have now been removed to the State hospitals for the insane, and those hospitals now contain an insane population of 8700 persons. There are 8800 insane men and women in the asylums of Kings and New York counties, so that the total insane population of the State in the State asylums is about 17,500.

It was upon October 1st, 1893, that the "State care" system went into full operation by the State assuming the financial responsibility for the support of all its insane poor except those of Kings and New York counties. This responsibility is a great one, because it imposes upon the State the duty of raising $1,300,000 for the support of the insane poor, and then of economically expending this large sum. The members of the Legislature and the Governor were naturally unwilling that such a large amount of money as $1,300,000 should be put into the hands of the hospital trustees without some State authority being established to see that the money was wisely spent. Accordingly the State Commission in Lunacy were empowered to audit estimates to be monthly submitted to them by the hospital trustees as to their needs for the succeeding month. Not a dollar of the $1,300,000 can be used to pay hospital expenses without their consent first being obtained. Substantially they are members of the State Finance Board, which supervises the expenditure of every penny appropriated for the support of the State hospitals.

The work already done as a financial board is of a highly interesting character. With the aim of learning precisely what amount of food is needed for the maintenance in good health of an insane patient they requested Dr. Austin Flint, Professor of Physiology and Physiological Anatomy in the Bellevue Hospital Medical College of New York, to state to them what articles of food and their amount each person requires to sustain life. They further stated that they desired each insane patient to have "a generous diet." Dr. Flint made a careful report in response to this request. He recommended, among other things, that good cooks should be hired for each of the hospitals. "Skilful cooking," he says in his report, "not alone contributes much to the comfort

and well-being of patients, but, by reducing waste of material to the minimum, is an important element in economical administration. While it may be proper to provide for ordinary paupers and criminals little more than enough to keep them in fair physical condition, the insane poor, though a charge upon the State, should receive better consideration. Again, a most important part of the treatment of the insane relates to general nutrition ; and many patients suffering from mental diseases require a great abundance of nutritious food, which contributes very largely to their cure, and thereby tends to relieve the State from their care and maintenance for a long period." Dr. Flint recommended the following quantities of supplies for 100 persons for thirty days :

Meat, with bone, including salt meat, fresh and salted fish, and poultry	2,250 pounds.
Flour (may be in part substituted by corn meal and maccaroni)	3,000 "
Potatoes	1,500 "
Milk	750 quarts.
Eggs	493 dozen.
Sugar	429 pounds.
Butter	429 "
Cheese	429 "
Rice	108 "
Hominy	108 "
Oat meal	108 "
Coffee	215 "
Tea	26 "

The Commission in Lunacy, armed with this report, were able to audit with intelligence the estimates of the superintendents of the eight State hospitals. Some of the hospitals were buying an excessive quantity of food ; others not quite sufficient. These estimates were equalized, and each hospital was put upon the same basis.

The insane patients in every hospital will get equally good food and an equally large quantity of it. Moreover, they receive the same scientific medical treatment. It will be immaterial to the friends of an insane patient as to which one of the hospitals shall receive the afflicted person. Formerly

there was great inequality between the hospitals. The chronic cases were packed off to Willard Asylum, while those cases which were thought to be curable were sent to hospitals, where they were better fed and received better medical care. Now every hospital will enjoy the same standard of good care of its patients.

The Commissioners in Lunacy are aiming to reduce the expenses of maintaining the hospitals without in any way lowering the character of the care they give to patients. With this aim they suggested to the eight superintendents of hospitals that they should appoint from their number a committee of three to buy the staple supplies of the institutions in their care, namely, coal, wood, groceries, flour, sugar, etc. This Committee on Supplies advertised for proposals for the large quantity of such articles needed by the hospitals yearly, instead of each hospital advertising separately, as formerly, and thus in open competition secured most excellent terms for the State. The State hospitals thus in future will buy by wholesale, instead of, as it were, by retail. Having a population of 8700 persons to feed, the Committee on Supplies can make big purchases at low rates; and as the State pays cash, exceptionally low rates have been obtained. The hospitals consume 250 tons of sugar a year and 560 barrels of flour a month.

In the course of the month of October the Commissioners in Lunacy cut down the estimates $55,000; and for the month of November they have cut them down $35,000. Dr. MacDonald thinks that further great economies can be made. "We are enforcing a policy," he said, "of having the inmates of insane asylums make all their own clothing. The inmates of New York's asylum on Blackwell's Island do so, and it is perfectly feasible in all the State hospitals. All farm work also ought to be done by the inmates of the hospitals. It will be good for the health of the patients to have them work out of doors. All the vegetables and farm products—hay and the like—thus can be raised by the inmates of the hospitals, and large sums saved. The inmates of the hospitals also ought to make the mattresses of these institutions. We are gradually substituting hair mattresses for the old straw ones."

One of the novel reforms which the Commissioners in Lunacy have started out to bring about is the disuse of tobacco in any form in the hospitals. Dr. MacDonald says, "It is highly unwise to give insane patients, who are a peculiarly nervous class of people, tobacco, either to chew or to smoke. We found upon investigation that the supplying of tobacco to the inmates of the hospitals was costing the State the large sum of $15,000 annually. But that was not the worst of it; the health of the patients is seriously affected, and when smoking is permitted there is danger of fire. One hospital has had four fires in the last year—all, there is reason to think, the result of tobacco. There is no danger to the health of patients in suddenly depriving them of their tobacco. Why, on Ward's Island there are 2000 men patients who have not used tobacco in any form since 1877, and they are in excellent health. We have, therefore, refused to allow any money in the hospital estimates for the use of tobacco."

Still another reform which has already been accomplished by the Commissioners in Lunacy is the cutting off from the State's hospitable table of a large number of relatives of officers of the State hospitals. Commenting upon this fact, Henry A. Reeves, of the Commission, said, "We required the hospital authorities to give us the name and occupation of every person who lived in the hospital under their charge. In this manner we learned that a good many relatives—cousins, aunts, nephews—of hospital people were being supported by the State without rendering any service for it. We have requested the Attorney-General to give us his definition of the term 'family,' for it seems to be an elastic term which covers all kinds of people. Hospital officers receive board for their 'families'; but we do not think this means their cousins and aunts as well. We have refused to consent to these persons being boarded at the expense of the State. We have also declined to consent to a large number of people attached to the hospitals having horses and carriages—at least at the State's expense. One asylum we found had four florists. We judged this to be an excessive number, and we declined to agree to the payment of three of them. The places of the three dismissed florists can well be taken by able-bodied inmates of the hospitals. One florist is sufficient for each hospital."

It is thus obvious that the State Commission in Lunacy is intent upon having the 8000 inmates of the asylum fed well; but at the same time is determined to keep down the expenses of these institutions. The policy is an excellent one. The taxpayers of the State desire the insane poor to have abundant food and to be well lodged; but they also wish that the expenses of the hospitals shall be kept at a low point.

A REPORT OF TUBERCULOSIS.

Tuberculosis victims in the United States number 163,500 annually. Of these 141,000 are charged to consumption, 12,000 to tubercular meningitis, and 10,500 to scrofula. Each death is asserted to represent two years of sickness. That means that there are now 327,000 persons in the United States dying of tuberculosis. The money cost of this enemy of life is estimated to be greatly in excess of $100,000,000. Statistics show that the ravages of tubercular diseases are being slowly reduced, and scientists are not altogether without hope of discovering a preventive or a remedy for a class of disease whose victims are more numerous than those of war.

Dr. Hermann M. Biggs, the Chief Inspector of Pathology, Bacteriology, and Disinfection in the Health Department of New York, recently made a lengthy report to the Department regarding the contagiousness of tuberculosis, accompanied by a number of recommendations. His explanation regarding the nature of the disease was thus summarized:

First, tuberculosis is a contagious disease, and is distinctly preventable.

Second, it is acquired by the direct transmission of the tubercle bacilli from the sick to the well, usually by means of the dried and pulverized sputum floating as dust in the air.

Third, it can be largely prevented by simple and easily applied measures of cleanliness and disinfection.

Dr. Biggs, in the report, refers to tuberculosis as the most common and fatal disease which prevails in New York, and makes the following statements:

In 1892 more than six thousand deaths were reported to the New York City Health Department as due to tuberculosis. While this condition of affairs and its significance have long been recognized by the Board of Health, owing to various

considerations well known to those familiar with tuberculosis, this disease has not up to this time come under the official sanitary surveillance of the Department.

His recommendations are appended in part as follows:

First, that there be systematically disseminated among the people by means of circulars, publications, etc., the knowledge that every tubercular person may be a source of actual danger to his associates and his own chances of recovery diminished if the discharges from the lungs are not immediately destroyed or rendered harmless.

Second, that all public institutions, such as asylums, homes, hospitals, dispensaries, etc., be required to transmit to the Board of Health the names and addresses of all persons suffering from pulmonary tuberculosis.

Third, that special inspectors be assigned to duty for the investigation of this disease.

Fourth, that the Board urge upon hospital authorities the importance of separation, so far as possible, in the hospitals of this city, of persons suffering from pulmonary tuberculosis from those affected with other diseases.

Fifth, that the Department of Charities and Correction of this city be requested to set apart one of the hospitals under its charge, to be known as the "Consumptive Hospital," to be used for the exclusive treatment of this disease.

Sixth, that the Board undertake the bacteriological examination of the sputum for diagnosis in every case of doubtful character in hospitals or private dwellings or tenement-houses, where the physician in attendance desires that this should be done.

Seventh, that all physicians practising their professions in this city be requested to notify the Board of Health of all cases of pulmonary tuberculosis coming under their professional care.

Pulmonary Consumption.—On November 28th Dr. Biggs sent the following communication to the Hon. Charles G. Wilson, President of the Board of Health of New York. This report is equally applicable for the State at large, and is therefore herewith presented.

The most common and fatal disease which prevails in New York is both contagious and preventable. In 1892 more than

six thousand deaths were reported to the New York City Health Department as due to tuberculosis. While this condition of affairs and its significance has long been recognized by the Board of Health, owing to various considerations well known to those familiar with tuberculosis, this disease has not up to this time come under the official sanitary surveillance of the Department.

In 1889 the Board of Health requested its pathologist to formulate a brief statement regarding the contagiousness of tuberculosis and the best means for its restriction. In compliance with its request a report on the nature and prevention of tuberculosis was made. The chief purpose of the Board then was the dissemination of the knowledge of the contagiousness of tuberculosis and the education of the people as to the communicable and preventable character of this disease. The report of the pathologists and circulars based upon it detailing measures of prevention were then widely published and circulated by the Department.

In the annual report of the New York City Health Department for 1892 you have presented an analysis of the mortality tables of pulmonary disease, showing the distribution, the ratio of increase and decrease in wards, relation to density of population, etc., of pneumonia, tuberculosis, and bronchitis, which has brought out many important facts regarding the spread of these diseases, and especially of tuberculosis, and afforded many suggestions as to their sanitary surveillance and investigation.

The time, it seems to me, has now arrived when it becomes the duty of all sanitary authorities to assume a more aggressive attitude toward this the most widely prevalent and fatal disease to which the human race is subject, and I desire to present to the Board for its consideration certain suggestions as to the definite means which should at once be taken to prevent and restrict tuberculosis.

It may not be amiss, in order to bring out more forcibly the immediate necessity of such a course, to recount some of the known and now generally accepted facts regarding the nature of this disease. The disease known as tuberculosis may affect any organ or tissue of the body. When it affects the lungs it is called pulmonary tuberculosis, or consumption.

In this form it causes one fourth of all deaths occurring in the human being during adult life, and more than one half of the entire adult population at some time in life acquire it. It has been proved beyond a doubt that a living germ called the tuberculosis bacillus is the cause, and the only cause, of tuberculosis. When these germs find their way into the body they multiply there, if favorable conditions for their growth exist, and produce small new growths or nodules (tubercles), which tend to soften. The discharges from these softened tubercles containing the living germs are thrown off from the body. In pulmonary tuberculosis the expectoration contains the germs often in numerous numbers. It has been shown that many millions of tubercle bacilli may be discharged under certain conditions in the course of twenty-four hours by one person suffering from tuberculosis. The germs thus thrown off do not grow outside the living human or animal body except under artificial conditions, but they may retain their vitality and virulence for long periods even when thoroughly dried. As tuberculosis can only result from the action of these germs, it follows, from what has been said, that when the disease is acquired it must result from receiving into the body the living germs that have come from some other human being or animal affected with the disease ; in other words, it cannot occur except by direct communication from some other individual or animal suffering from the tuberculosis.

While the meat and milk of tuberculous cattle may be important sources of danger, yet the disease is acquired, as a rule, through its communication directly from man to man. The expectoration of tubercular persons frequently lodges in places where it afterward dries, as on handkerchiefs, clothing, carpets, floors, the streets, and so on. After drying, it is very apt, in one way or another, to become pulverized and float in the air as dust. Pulmonary tuberculosis or consumption (the most common form of the disease) is usually produced by breathing air in which the living germs are suspended as dust. It has been shown experimentally that dust collected from the most varied points in hospital yards, asylums, prisons, hotel bedrooms, private houses, etc., where consumptive patients have lived, is capable of producing the disease. Such dust may retain for weeks, and even months, its power of

causing the disease, and persons inhaling the air in which this dust is suspended breathe in the living germs. It should, however, be distinctly understood that the breath of tubercular patients and the moist sputum received in proper cups are not elements of danger, but only the dried and pulverized sputum. The breath and moist sputum are free from danger because the germs are not dislodged from moist surfaces by currents of air. If all discharges were destroyed at the time of their exit, by far the greatest danger of communication from man to man would be removed.

It is a well-known fact that some persons, and especially the members of some families, are particularly liable to tuberculosis. So marked and so frequent is the development of the disease in certain families that the affection has long been considered hereditary. We now know that the disease itself is very rarely hereditary, but that there is inherited a liability to the disease, which renders the individual an easier prey to the living germs when once they have gained an entrance.

When the parents are affected with tuberculosis, the children, from the earliest moments of life, are exposed to the disease under the most favorable condition for its transmission; for not only is the dust of the house to contain the bacilli, but the relations also between parents and children, especially between mother and child, are of that close and intimate nature especially favorable for transmission by direct contact. The frequent occurrences of several cases of pulmonary tuberculosis in a family is, then, not to be explained on a supposition that the disease itself has been inherited, but that it has been produced after birth by transmission directly from some other individual.

It follows, from what has been said, that tuberculosis is a communicable—that is, a contagious—germ disease, and that it is distinctly preventable. The means which are most certain to prevent its spread from one individual to another are those of scrupulous cleanliness regarding the sputum. These means are largely within the control of the individual. It should be constantly kept in mind that it is the sputum and the sputum alone which is commonly the important agent in its transmission.

It is furthermore to be remembered that consumption is not

always, or even generally, as was formerly supposed, a fatal disease, but that in a very large proportion of cases, if recognized early, it is a distinctly curable affection. An individual who is well on the road to recovery may, if he does not with the greatest care destroy his sputum, diminish by self-inoculation his chances of recovery.

The following facts should be emphatically emphasized :

First, tuberculosis is a contagious disease, and is distinctly preventable.

Second, it is acquired by the direct transmission of the tubercle bacilli from the sick to the well, usually by means of the dried and pulverized sputum floating as dust in the air.

Third, it can be largely prevented by simple and easily applied measures of cleanliness and disinfection.

The time has arrived when the knowledge concerning the causation, extension, and prevention of pulmonary tuberculosis is sufficiently definite to make possible the adoption of important practical measures for its restriction ; yet these measures must at present differ in many respects from the more summary proceedings justified in other more readily transmissible diseases, for it is to be remembered that while tuberculosis is always the result of infection, yet it is far less communicable than some contagious diseases, and with proper precautions victims of this disease may, without endangering others, pursue their usual vocations.

I would therefore recommend, first, that there be systematically disseminated among the people, by means of circulars, publications, etc., the knowledge that every tubercular person may be a source of actual danger to his associates, and his own chances of recovery be diminished if the discharges from the lungs are not immediately destroyed or rendered harmless.

Second, that all public institutions, such as asylums, homes, dispensaries, etc., be required to transmit to the Board of Health the names and addresses of all persons suffering from pulmonary tuberculosis within seven days of the time when such persons first come under observation.

Third, that special inspectors be assigned to duty for the investigation of this disease ; and whenever the Department has become aware of the existence of families or premises

where tuberculosis exists, or has recently existed (as in case of death or removal), it shall be the duty of these inspectors to visit such premises and deliver proper circulars and give suitable information to the persons residing there and take such specific measures of disinfection as are required in each case.

Fourth, that the Board urge upon hospital authorities the importance of separation, so far as possible, in the hospitals of this city, of persons suffering from pulmonary tuberculosis from those affected with other diseases, and urge that proper wards be set apart from the exclusive treatment of this disease.

Fifth, that the Department of Charities and Correction of this city be requested to set apart one of the hospitals under its charge, to be known as the "Consumptive Hospital," to be used for the exclusive treatment of this disease; and that, so far as practicable, all inmates of the institution under its care suffering from tuberculosis be transferred to that hospital.

Sixth, that the Health Department undertake the bacteriological examination of the sputum for diagnosis in every case of pulmonary disease of doubtful character in hospitals or private dwellings or tenement-houses where the physician in attendance desires that this should be done, this procedure to be carried out with a view of obtaining definite knowledge upon which the proper sanitary surveillance of those suffering from tuberculosis can be based.

Seventh, that all physicians practising their profession in this city be requested to notity the Board of Health of all cases of pulmonary tuberculosis coming under their professional care.

For the proper performance of the preliminary work as detailed above, a special corps of medical inspectors and disinfectors should be provided whose duty should be entirely confined to work connected with the investigation of tuberculosis and the carrying out of the means to be taken for its prevention.

Finally, in urging the adoption of this report, or the adoption of some action similar to what it recommends, I would add that there is, it seems to me, a widespread feeling among the medical profession and the laity that some efficient means should be taken at once to prevent the great and unnecessary

loss of human life caused by consumption, and that it is imperative that sanitary authorities adopt such means as science has shown to be practicable and efficient in controlling the ravages of this disease.

CIRCULAR OF INFORMATION CONCERNING THE USE OF BACTERIAL CULTURES FOR THE DIAGNOSIS OF DIPHTHERIA.

NEW YORK, July, 1893.

Recent bacterial investigations have shown that a considerable proportion of the cases of pseudo-membranous and exudative inflammations of the throat and upper air passages, commonly considered as diphtheria, and having the anatomical appearances found in diphtheria, are not true diphtheria. These cases may be called pseudo or false diphtheria.

It has also been shown that a considerable number of cases which are apparently false diphtheria prove, on bacterial examination, to be true diphtheria. While in true diphtheria the mortality is very high and the danger of transmission to others is great, in false diphtheria the mortality is low and the danger of infection slight. The differential diagnosis between true and false diphtheria can be made by bacteriological examination within twelve hours, while without this the differentiation is difficult or impossible.

The Health Department is now prepared to make use of bacterial cultures for diagnosis in all cases of suspected diphtheria occurring in the city, and desires that in every case either the physicians should themselves make the inoculations, or should authorize an inspector to make them. They should be made in every suspicious case at the earliest possible moment, for during convalescence the specific organisms often disappear from the throat, and the full benefit of a positive diagnosis is not obtained unless it is made early in the disease.

The inoculations are made by gently rubbing a cotton swab against the throat and then drawing it over the surface of the culture medium. When the physician himself desires to make the culture (and this is usually the better plan, for it can be done earlier and is more agreeable to the family), he can obtain, free of cost, a culture tube and swab, and the simple directions necessary for their use, at any one of the druggists whose addresses may be given. After the inoculation the

tubes are to be returned at once to the druggist from whom they were obtained. The tubes will be collected by the Department every evening.

In cases where an inoculation has not been made by the attending physician, the medical inspector will make one, unless for any reason the physician requests that none be made when he notifies the Department of the case.

The diagnosis will be ready by noon of the following day. The attending physician can obtain this immediately by telephoning to the laboratory; or, when this is not done, he will be notified by mail. Cases which prove to be false diphtheria will not be visited by the Health Department inspectors. Cases, on the other hand, which prove to be true diphtheria will be subjected to the usual rules and regulations covering contagious diseases.

EFFORTS TO LIMIT THE SPREAD OF TUBERCULOSIS AND DIPHTHERIA.

The following report, by Dr. Cyrus Edson, Chairman of the Sanitary Committee of the Board of Health of the city of New York, was adopted by the Board July 13th:

The report of Dr. Hermann M. Biggs, the bacteriologist of this Department, relative to tuberculosis, is, in the opinion of the Chairman of the Sanitary Committee, timely and well advised. The subject is well summed up in three facts relative to the disease set forth, to wit:

First, tuberculosis is a contagious disease, and is distinctly preventable. Second, it is acquired by direct transmission of the tubercle bacilli from the sick to the well, usually by the means of the dried and pulverized sputum floating as dust in the air. Third, it can be largely prevented by simple and easily applied measures of cleanliness and disinfection.

The following recommendations, based upon the foregoing premises, are approved and offered to the Board for its consideration:

First, that a circular be prepared for the distribution among the people, setting forth the danger of contagion from tuberculosis and the fact that the discharges from the lungs of tubercular patients are dangerous not only to others but also to the patients afflicted, and also setting forth the danger of

expectorating in places where the sputum is liable to be dried and carried by the air in the form of dust.

Second, that physicians and other persons to whom the knowledge of the existence of a case of tuberculosis may come be requested to report to this Department all such cases within seven days of the time when such sick person comes under observation.

Third, the medical sanitary inspectors should, as a part of their duty, investigate cases of the disease reported and take specimen of the sputa for diagnostic purposes, as is done in cases of diphtheria. These specimens should be transmitted to the division of bacteriology for examination, and the division of bacteriology should be properly equipped for such examination for the purpose of obtaining definite knowledge upon which the proper sanitary surveillance of those suffering from tuberculosis can be based. Upon the verification of the diagnosis the inspector should visit the physician reporting each case and request him to fully instruct his patient and the persons with whom he is in contact concerning the nature of the disease and the danger of its transmission. If the case is reported by the layman, or if the physician prefers that the inspector should assume the aforesaid duty, then the inspector should personally perform this service.

Fourth, the following preamble and resolutions should be adopted and sent to each of the general hospitals and to the Commissioners of Charities and Correction :

Whereas, Tuberculosis is a contagious disease, and is distinctly preventable ; and

Whereas, It is acquired by the direct transmission of the tubercle bacilli from the sick to the well—usually by the means of the dried and pulverzed sputum floating as dust in the air ; and

Whereas, It can be largely prevented by simple and easily applied measures of cleanliness and disinfection, and to some extent by segregation of those suffering from it ; be it therefore

Resolved, That this Board urge upon hospital authorities of the city of New York the importance of separation so far as possible in the hospitals in this city of persons suffering from pulmonary tuberculosis from those affected with other diseases, and urge that proper wards be set apart for the exclusive treatment of this disease ; and be it further

Resolved, That the Commissioners of Charities and Correction be recommended to take such steps as will enable them

to have and control a hospital to be known as the "Consumptive Hospital," to be used for the exclusive treatment of this disease; and that, as far as practicable, all inmates of the institutions under their care suffering from tuberculosis be transferred to this hospital.

Fifth, it is recommended that the disinfecting corps disinfect places where evidence of infection from tuberculosis exists whenever, in the opinion of the chief inspector of contagious diseases, it shall be necessary.

Sixth, it is recommended that suitable receptacles for sputa (cuspidors) be provided and properly cared for in all places where persons are brought together or caused to congregate for any purpose, especially in factory buildings.

The Board of Health has issued the following circulars to physicians, prepared by Dr. Hermann M. Biggs:

During the last few months a series of investigations has been made in the bacteriological laboratory of the Health Department to determine how long the Lœffler bacilli remains in the throat after the disappearance of all false membrane in cases of diphtheria. The results obtained are extremely significant, and have caused the Department to establish a new rule regarding the discharge from observation of patients who have suffered from diphtheria and regarding the time of disinfection of the premises.

During the past three months 450 cases of true diphtheria have been subjected to repeated bacteriological examinations performed at short intervals during the course of the disease and during convalescence. In all of these cases cultures were made at the beginning of the disease, again after the lapse of three or four days, and finally at short periods after the complete disappearance of the false membrane until the throat was found to be free from the diphtheria bacillus. In 245 of these 450 cases the diphtheria bacilli disappeared within three days after the complete separation of the false membrane; in 160 cases the diphtheria bacilli persisted for a longer time —namely, in 103 cases for seven days, in 34 cases for twelve days, in 16 cases for fifteen days, in 4 cases for three weeks, and in 3 cases for five weeks after the time when the exudation had completely disappeared from the upper passages.

In many of these cases the patients were apparently well many days before the infectious agent had disappeared from

the throat. These results show that in a considerable proportion of cases persons who have had diphtheria continue to carry the germs of the disease in their throat for many days after all signs of the disease have disappeared. No doubt the disease is largely disseminated by these persons, who are apparently well and who mingle with others while their throat secretions still contain the diphtheria bacilli.

These experiments have led the Health Department to adopt the rule that no person who has suffered from diphtheria shall be considered free from contagion until it has been shown by bacteriological examination, made after the disappearance of the membrane from the throat, that the throat secretions no longer contain the diphtheria bacilli, and that until such examinations have shown such absence the person must remain isolated and under observation. Disinfection of the premises, therefore, will not be performed by the Department until examination has shown the absence of the organisms.

Secondary cultures, as in the case of primary cultures, may be made by the attending physician if he so desires; otherwise they will be made by the inspector of the district in which the case occurs. This applies only to cases occurring in boarding-houses, hotels, and tenement-houses, not to those occurring in private houses.

In this connection an interesting observation has been made showing that in diphtheria cases which have been subjected to frequent irrigation with antiseptic solutions from the beginning of the disease the bacilli as a rule disappear far more rapidly than in those in which such irrigations have not been employed. The Department would feel grateful for any data which physicians of the city may furnish as to the treatment employed in each case, in order that more reliable conclusions may be reached as to the best mode of treatment.

DISTRICT HOSPITALS FOR THE CARE OF INFECTIOUS AND CONTAGIOUS DISEASES.

Attention is again invited to the recommendations of the report of the Committee on Hygiene for 1892, in which it was urged that district hospitals for the care of infectious and contagious diseases be speedily provided, and also that refuges

for well persons, especially for those from houses where contagious diseases exist, be provided. In the establishment of the Willard Parker Hospital, with its seventy beds, it was hoped that this would be the first of many. It has accomplished all that could be expected, and nobody has had fault to find with it during the years of its existence. But more such hospitals are required. To quote the language of the report of 1892: "We require a second hospital near the Battery, a third at West Eleventh or Twelfth streets, on the North River, a fourth between Sixtieth and Seventieth streets, North River, and a fifth one at least in Harlem." The most serious cases—exactly those which are most in need of hospital isolation and treatment—cannot be transported to a distant part of the city without risk of fearful increase of mortality. The more numerous the accommodations the more they will be appreciated and sought after. Indeed the Willard Parker is so distant from most habitations that the transfer of a patient is given up by many a family as a hopeless task, even where the existence of that charity is well known. If there was such an institution in various parts of the city every householder would be acquainted with the fact, and the beds would not be vacant except in the seasons of comparative immunity.

Another such difficulty is connected with the means of protecting the well against contagion from a brother or sister sick in bed. The tens of thousands of families living in two rooms, one of which is dark, or in two light rooms with a few dark closets between them, or even those who have a whole floor to themselves are in a hopeless position. Father and mother—or mostly the mother alone—take care of the sick and the well. No disinfection is of any use where the immediate contact is constant and unrestricted.

The grave question arises where to send the well children. Relatives and friends have children of their own, and refuse to accommodate those who have been exposed to the infection, so they have to remain until they are taken sick and pay the penalty of poverty or of insufficient care on the part of the family and on the part of society at large, either with temporary or permanent suffering or extermination.

Therefore, besides new hospitals to receive the sick as soon

as they are taken, there should be stations, refuges—call them what you please—where those children could be housed until the sick at home have either recovered or have been removed and their residence, bedding, and furniture have been thoroughly disinfected. The number of those thus cared for would easily grow into hundreds and shortly into thousands. Houses arranged for this purpose ought to contain dormitories and also provide rooms for such as can afford to pay for superior accommodation. Perhaps the appreciation of the blessing procured and of the calamities averted both from individuals and the communities by the execution of such a plan will so impress a wealthy fellow-citizen as to induce him to make the experiment with a hundred or two hundred beds.

Philanthropic people of the city of New York have seen fit, in connection with some charity or society organization, to establish what are called "day nurseries" for the care of children whose parents are obliged to go out to a day's work. These children are cared for from seven in the morning until seven in the evening, in the majority of cases without pay. An extension of this plan to include the night as well as the day would initiate the idea of a refuge for well children.

Diphtheria, scarlet-fever, or measles in a tenement-house means disaster to at least several of its inmates. During the year 1893 there were 6504 cases of diphtheria, 5764 cases of scarlet-fever, and 7122 cases of measles reported to the Health Department. To how great an extent relief might have been obtained over the dire disaster following in the track of such evils by the establishment of places of refuge can only be determined after thorough trial of a plan tending to limit what seems to be needless exposure.

Attention has also been called to the propagation of diseases in school-houses, by school-books, by the contact of clothing in the clothes-closets—which closets, in the majority of cases, are dark rooms without ventilation and through which usually a coil of steam-pipe runs.

Clothing is often hung up damp. The increase of heat during the six hours in which they are hung there furnishes as good an incubator for the propagation of germ growth as is usually found in a well-equipped biological laboratory.

Dr. Moreau Morris, of the New York Board of Health, has

presented a report showing the result of his investigation of certain common practices in public schools. Dr. Morris has found that in all the schools he visited the children used the slates and pencils in common. The children are in the habit of putting the pencils in their mouths, and in that way communicate the disease. Dr. Morris condemned the use of slates in schools altogether. He also recommends that books which have been used by children who were sick should be destroyed, and that paper book-covers should be substituted for muslin.

Respectfully submitted,

C. E. BRUCE, M.D.,
LEWIS BALCH, M.D.,
A. N. BELL, M.D.,
For the Committee.

February 7, 1894.

REVIEW OF THE SANITARY CONDITION OF NEW YORK CITY.

REPORT OF THE COMMITTEE ON HYGIENE OF THE COUNTY MEDICAL SOCIETY.

To the Medical Society of the County of New York:

THE Committee on Hygiene would emphasize its report of last year, in which the sanitary condition of the city was reviewed. No substantial change has been effected in any direction.

1. *The question of the purity of the Croton water supply* has received so much attention from the Academy of Medicine that your committee has not thought it necessary to devote much time to its consideration—not that it has been unappreciative of the importance of the subject, but thinking that nothing could be accomplished which the Academy of Medicine was unable to do.

Attention cannot be called too often to the danger lurking in a glass of water when that water is obtained from a well situated in close proximity to a privy vault, or cesspool, or both. Who knows but there may be a seam in that stratum

of a rock through which may pass cesspool contents not even filtered through the soil?

Your Chairman recalls a situation like this: A baker with a store and oven on the front of a 25 × 100 feet lot; a tenement-house in the rear; between these buildings an open yard 25 × 40 feet, in which was located a privy vault, a horse stable with an open manure box, and a shallow well, the water from which was grossly contaminated. Yet from this source the baker procured the water used in making the bread, which was sold throughout the neighborhood, and the tenants of the house the water for various culinary purposes. The baker thought it a great hardship that he should be compelled to fill up this well and go a block or two for Croton water.

Attention is called to the danger of drinking from the average water-tank, as found in railway cars and stations and other public places.

Many cases of typhoid-fever of mysterious origin could be traced to the filthy water-tank, which has been filled with water and ice of doubtful purity, and refilled each day without cleansing; the faucet, being an inch or two above the bottom of the tank, permits an accumulation of an inch or two of sediment loaded with germs.

It seems surprising that the public are so careless in drinking fluids of the purity of which they know nothing, when the same persons are very particular and even dainty as to what they eat.

2. *Horse Stable and Manure Regulations.*—The present regulations of the Health Department, if rigidly enforced, leave little to be desired in the conduct of horse stables. The regulations are, briefly, as follows: That the flooring of stalls be water-tight, draining toward a valley drain, which is connected with the street sewer by means of an iron pipe properly trapped; that the yards be properly graded and paved, and connected with the sewer; that manure shall be kept within the stable in tightly covered receptacles, except in certain cases where there is a rear yard at a considerable distance from a human habitation, in which case, and by a special written permit granted by the Board of Health, the manure may be kept in a properly covered manure vault or box. The manure to be removed at frequent intervals from within

the premises in tight carts properly covered, and transported directly to a designated pier or bulkhead, which pier or bulkhead must be not less than 300 feet from an inhabited dwelling. There the manure is to be dumped directly upon scows or floats, to be immediately taken out of the city. No accumulation of manure in the city is permitted. The use of sidewalk vaults and the carrying of loose manure across sidewalks is prohibited.

The substitution of cable traction for horses on street cars in Broadway and Third Avenue removes three thousand horses from these thoroughfares. This means that in future twenty tons less of manure will be daily dropped in these streets.

3. *Garbage and Ash Cart Nuisances.*—Your committee would again urge the cremation of garbage, or at least the adoption of some measure which will do away with the necessity of dumping ashes and garbage at sea, or, rather, in the mouth of the harbor, to be swept back by the incoming tide to fill up the channels and to pollute the neighboring shores.

The faulty manner in which streets are cleaned and house refuse collected induces many householders to employ private contractors to do that which should be done equally well by the Department of Street Cleaning. It is a hardship that persons are compelled to pay twice for anything, and yet that is what we do when we pay taxes and again pay for street cleaning and refuse removal.

The separation of ashes and garbage is possible—at least in the better portion of the city—if the Department of Street Cleaning would provide separate carts and use them properly. The separation of ashes and garbage would remove much of the difficulty in disposing of both ; for the ashes and inoffensive refuse, which constitute the larger portion of the material, could be used at all seasons of the year for filling sunken lands, while the garbage could be removed from the city and utilized as fertilizer or fed to swine. Until some radical change is made in the methods of the Street Cleaning Department, two practical rules should be enforced. (1) That drivers of carts should take the ash and garbage receptacle from within the premises, and, after emptying it, replace it ; in no case leaving it upon the sidewalk (as they habitually do at present).

The enforcement of this rule would remove the unsightly and offensive receptacle from the area or sidewalk.

(2) The carts must be water-tight, and not filled within two inches of the top, and when so filled, to be securely covered so as to effectually prevent the scattering of the contents, either by jolting of the cart or by the wind.

4. *Measures to Prevent the Dissemination of Communicable Diseases at the Dispensaries.*—Your committee would again speak of the great necessity of preventing by adequate means the dissemination of disease through the intermingling of patients at dispensaries.

As each patient enters a dispensary, he or she should be seen by a physician, who should make a diagnosis, and, if any communicable disease is found, to prevent communication with other patients. There is no doubt that many diseases are communicated through neglect of this simple precaution.

Phthisis.—It is earnestly recommended that more adequate measures be adopted to prevent the spread of tuberculosis. Nearly every physician can recall cases of undoubted contraction of the disease from association and contact with the afflicted.

The ignorance of the laity and the carelessness of the profession are responsible for many deaths from phthisis. It has come to be acknowledged that the bacilli of tuberculosis may float in the watery vapor exhaled from the lungs. How far they may be carried may be estimated by the distance a person's breath may be seen on a frosty morning, or how far a tainted breath may be perceived.

If the bacilli borne on the breath fail to find lodgment in a fertile soil, then the same result may be accomplished in many other ways, as through means of the dried and pulverized expectoration blown by the wind or carried by dress trains into houses hitherto healthful.

Syphilitics are allowed to roam about, a constant menace to the public health—using the common towel and hair-brush in sleeping-car, hotel, and restaurant, drinking from public fountain, and even from a communion cup subsequently passed to pure lips. The scourge of syphilis afflicts the innocent oftener than we are apt to think.

Your committee would urge that *more power be invested in*

the State Board of Health, and more means appropriated to enable it to perform more thorough work in every direction. There should be competent State sanitary inspectors, whose duty it should be to inspect rural districts as to the condition of drainage, the proximity of wells to privies and cesspools, the prevention of the pollution of streams which eventually furnish the water supply of cities, the condition of health of milch cows and animals fattened for slaughter, with special reference to the existence of tuberculosis among them, and, finally, to act as teachers of sanitation to those careless of such matters. Your committee has viewed with pleasure the recent action of the Academy of Medicine in favoring the creation of a Bureau of Public Health under the general Government.

Respectfully submitted,

(Signed) W. A. EWING, M.D.,
Chairman,
S. HENRY DESSAU, M.D.,
EGBERT H. GRANDIN, M.D.,
ROBERT T. MORRIS, M.D.

NEW YORK, October 23, 1893.

THE INFECTIOUSNESS OF PULMONARY TUBERCULOSIS.

IT is best, perhaps, to speak of the infectiousness of tuberculosis, and for the present to leave the question of contagion aside. The terms "infection" and "contagion" are, indeed, interchangeable; but the first expresses a remote, the latter an immediate contingency. Besides, the first is the most usual way in which the disease is transmitted. It is true there are instances of its direct transmission by contact, but then these are, for the most part, affections of exterior parts, of the joints, skin, eyes, etc. With such cases we are not in this paper particularly concerned, yet they should be remembered as showing tuberculosis in an important and significant light.

Of the infectiousness of tuberculosis of the lungs, a disease,

as Dr. Cornet well observes, that maintains no strongly marked definite type, but shows variations within wide limits, there is now no longer any reasonable doubt. It is perhaps true that pulmonary tuberculosis is not so intensely infectious as is small-pox, or diphtheria, or scarlet-fever. We might say, with a not too violent perversion of a classic metaphor, that it is *parasitically* infectious—that is, it flourishes most in the company of other diseases (and under these conditions really assumes the severity of an infectious disease), and on a soil specially prepared for it. It is at this point that hereditary predisposition becomes so mysteriously and characteristically important. And as to the first part of our proposition, namely, that tuberculosis of the lungs requires the alliance of other diseases, or, to speak more accurately, other morbific germs, to make its contagion effective, we must cite a profound and suggestive paper by Dr. Cornet, which he entitles "Mischinfektion," wherein he shows that the numerous family of the saprophytes are the active allies of the tubercle-bacillus and that their ravages lead to those rapidly fatal cases of pulmonary tuberculosis, to the formation of cavities, etc. Another excellent authority, Dr. Bennet, while he admits the infectiousness of tuberculosis, denies that it is infectious, except in "pre-breathed" air—a useful phrase, of much descriptive truth, which may be left to explain itself.

At this point we cannot do better than examine critically some of the typical cases of infection. A and B live together —man and wife. A becomes tuberculous; B nurses him. Several months pass by and A dies. Proximately B too dies of tuberculosis. In this case the presumption of infection or contagion is justly held to be very strong, and although there is here no *direct* proof of the transmission of tuberculosis, yet we are justified in believing that the disease has really been communicated by A to B, for B's conditions, as we shall endeavor to show, were just those under which this kind of contagion becomes effective. An even better instance is the following, to be found in the appendix of Mr. G. A. Heron's book on the "Communicability of Consumption." "Ogsten records the case of a healthy family of ten persons without hereditary taint. A son contracted consumption abroad and returned home to be nursed. His two sisters nursed him,

while a brother shared his room and bed. These three and the patient all died of consumption. The parents and the four surviving sons remained healthy." * We look upon this case as particularly strong in favor of the infection-theory. It is scarcely possible not to believe that the brother and sisters were helped to their malady, if not actually infected, by the patient. Here, as in all other examples, there are these characteristics to be noted: First, that the infection exists amid conditions that augment its virulence. Thus we see that an atmosphere which contains the bacillus and the saprophytes together—an atmosphere, as Dr. Bennet excellently terms it, of *pre-breathed* air, pre-breathed by tuberculous persons, of course—is the one that carries with it the most effective contagion. Secondly, there is commonly some very close relation between the carrier and the recipient of the poison, between the person that infects and the one that is infected—a relation like that of husband and wife, patient and nurse—of such a kind that the healthy person is kept in constant attendance on the other, so that there must be frequent imbibitions of the poison, continual inoculations, so to speak, which at last have their effect. In sober truth, it is this constancy and closeness of relation, this uniformity in the condition, this unvarying danger, that forms a set of conditions from which it is difficult to escape with impunity.

That such are the conditions in which the tuberculous infection is paramount may be sufficiently seen from the first typical case that we quoted. It is profoundly significant, too, that pulmonary tuberculosis is more often communicated by the husband to the wife than by the wife to the husband. In Mr. Heron's appendix we find fifteen of such cases described, and in thirteen the infection came from the husband, and in two from the wife. The reason must be that the wife, having, as a rule, no occupation abroad, is more constantly in the sick-room, in the midst of the infection, let us say, whereas the husband has his business and his avocations to call him away. In support of these views, we may be pardoned if we cite another typical instance of infection, an instance hardly susceptible of two explanations, as most cases unfortunately

* *British Medical Journal*, 1884, vol. ii.

are: "A healthy young military officer, without hereditary taint, whose wife was in the last stage of consumption, took with her a sea voyage lasting four months. On account of bad weather they were confined very much to their cabin, which was small and badly ventilated. On their arrival in London the wife died, and the husband showed the first signs of consumption." It is scarcely possible to find any better instance to illustrate the conditions of a true case of infection.

One notion of an infectious disease is that of a contagion which spreads rapidly at a rate above the mean, and never changes its epidemic form. By an epidemic disease we understand one that always resides in the community. In this sense pulmonary tuberculosis is undoubtedly an endemic disease. But it never, or seldom, spreads at a rate above the mean. M. Arthaud,* indeed, has described four instances in which it has apparently assumed the severity and gravity of virulent contagion. His best example is to the following purpose: "A merchant of Paris asked me to attend his phthisical son. On inquiry I found that this lad, aged seven years, was in the habit of playing in his father's counting-house, where there was a tuberculous employé who expectorated profusely on the floor. After the son I subsequently attended the father, and then the grandfather. Of this family the mother alone, who never appeared at the counting-house, remained healthy." There was, we doubt not, a close connection between the cases M. Arthaud observed, a connection which points to a real danger, and which assuredly demonstrates that regular measures of prophylaxis should be enforced in any community or domicile which becomes evidently the seat of contagion. In addition to such evidence, the frequency of pulmonary tuberculosis among the Catholic nursing orders of Prussia has always been regarded as an instance of true infection, and one worthy of the gravest attention. For the convent life of the nurses, its uniformity, its isolation, together with the fact that none is admitted but the robust, and that 63 per cent die of pulmonary tuberculosis, form a set of conditions that, as we have endeavored to show, we hope not fancifully but on good

* "Annales de la Policlinic de Paris," 1892, p. 49.

evidence, change this disease when it exists—it might be only in a latent condition—into an infectious form.

There are, however, cases in which the foregoing conditions are not evident, and only the possibility of acquiring the disease apparently remains. Such a case is the following: A, in whom no hereditary taint was discovered, died at the age of fifty-eight, of tuberculosis of the lungs, after an illness of four years. His father, mother, and only sister died (but not of tuberculosis), aged respectively eighty-seven, seventy-one, and seventy-seven years. Riffel,* who quotes this case, had unexampled opportunities to study A's antecedents back through two hundred years. He asserts that he could not have been infected at home, or in any intercourse without, for the patient in question led a perfectly uniform life in his native village, and never stirred from thence. In what sense, then, can this be called a case of infection, or is there any infection here? Mr. Heron, a radical thinker on this subject, attributes such cases to some hereditary tendency toward tuberculous disease. He cites a case of a family of eight persons, of whom seven died of pulmonary tuberculosis, but these seven people were so far removed from each other that there could not possibly have been any connection between these cases, as there would have been if infection were the cause.

It will thus be seen that our conceptions of the infectiousness or the contagiousness of a given disease will depend upon our interpretation of these words, and upon this subject we may have more to say at another time.—*The Medical News, January 27th*, 1894.

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* "Mittheilungen über die Erblichkeit und Infektiosität der Schwindsucht, Braunschweig, 1892, p. 166.

THE AMERICAN INVALID AID SOCIETY.

BOSTON, MASS., February 10, 1894

To the Editor of THE SANITARIAN :

The question is frequently asked us, orally and by letter, "What does the Invalid Aid Society amount to, and what are its aims and purposes?" In order to inform as many of the active sanitarians of the whole country upon this very important subject as possible, we ask your valuable space to briefly announce our plans.

The first object is to help protect the public health of the people by our endeavors to rescue a large class of diseased ones, for whom there has never been any organized effort to rescue instituted, and whose disease carries more of our young people to untimely graves than any other malady ; its name is, in common parlance, "*Consumption.*"

While the sanitarians, public health associations, national and State boards of health and control have been for years dealing deadly blows to nearly all forms of disease for the betterment of the public health, consumption has had but little, if anything, aimed at its destruction or abolition ; so that it has not been uncommon to see reports similar to what is to be seen to-day in the February number of THE SANITARIAN —viz., there were reported deaths due to consumption in one month (November, 1893) in California, 169 ; in Connecticut, 104 ; District of Columbia, 70 ; Florida, 38 ; Chicago, 169 ; New Orleans, 113 ; Baltimore, 79 ; Boston, 103 ; Detroit, 27 ; Minneapolis, 24 ; New York, 367 ; Philadelphia (in December, 1893), 228 ; Brooklyn, 180 ; Rhode Island, 42 ; Milwaukee, 27—enough to make a fair estimate that we as a nation lose more than one hundred thousand of our people annually from this one disease, and that there are at least twice one hundred thousand of our people who are afflicted with it.

The creation of the American Invalid Aid Society was inspired by the knowledge that consumption prevails much more extensively in some localities than it does in others, and that the chief hope of persons taken with it in unfavorable

localities consists in change of climate and sanitary surroundings. To this end the Society was organized; and while its primary effort is to relieve and cure the sick, its ultimate purpose is to promote and secure such co-operation by all sanitarians as will combat this scourge of the *people* of our land no less energetically than the Government forces fought and conquered, after a ten years' battle, the terrible pleuro-pneumonia that was killing our *cattle*.

Our Society, however, has adopted a somewhat different method of procedure to get the financial finger to do the pointing with. Instead of asking the Government to appropriate the money, we have begun by asking the afflicted people and their friends to contribute to its purpose in sums of $1 or more. We calculate that if we can get contributions equivalent to $1 annually for each person who now has the disease and all that may be overtaken by it during the next ten years, we can not only greatly reduce its mortality, but do much toward lessening the number of cases in its predisposing localities.

We have sent out some fifty young people during the year and a half of the work, now well begun, and we find we are beginning to get the desirable results aimed at. And so far, in the callow condition of the Society, we have saved 96 per cent of those we have undertaken to rescue, notwithstanding more than half of them we never saw, but did our work at the end of the life line by correspondence and letters of introduction to those who applied to us from a distance; for through co-operation with our correspondents we can rescue the victims if in New York or Wisconsin with nearly as much facility as though they were in touch with us at our office here in Boston. This is done by having a written diagnosis from a reliable physician setting forth the exact condition of the applicant. With this diagnosis and our knowledge of climates and favorable localities, selections of places are made with as much--or more—accuracy than by the attending physicians, who have not had time to give special attention to sanitary topography and climate. The Society is non-sectarian in every respect, and has no connection with any speculative scheme. It exists to find out all it can, from every possible source of information, just how best to "throw

out the life-line" so as to rescue the greatest number at the least cost to them—for it assumes that every rescued victim can repay for his or her rescue and restoration ; and all who have thus been rescued so far have been able to do this. But there is a large army of very worthy ones who are still being overwhelmed out of sight, never to come to the surface again until the resurrection day, that we would gladly save if we had the means at our disposal to do so. We have the lands placed at our disposal in abundance, in the best places, where we can give employment to such persons as soon as we can improve them by tents, cottages, and victualing houses.

We have a double-acting regulator to help on the work just as soon as we can get a little stronger financially, which is to induce the people to study, especially those who find they are a "misfit" in their affinity of environments, climate, etc., and acquire knowledge of hygienic laws, so as to enable them to make better use of the atmosphere of their nativity, and thereby live with less chances of being overtaken with consumption ; and to rescue those who do become victims as early as possible, while the chances of recovery are better and their strength is sufficient to enable them to do the most of the pulling themselves.

The Society has a lovely place of rescue in Florida—the "Moses Lyman Home"—a gift of the widow of the late Mr. Moses Lyman, of Connecticut. This property consists of eight acres of fine orange land, with good buildings, bordering on Crystal Lake, near Sanford. The matron in charge will make invalids and others at home for the small cost of from $6 to $10 per week, until the Society secures funds to conduct the place for the benefit of those who have no means to help themselves.

With the above explanations, we invite everybody who is interested to assist consumptives and help extinguish consumption in the most direct and practical way to join this Society. Dr. Charles Denison, of Denver, Col., has expressed his interest by contributing a large number of copies of his new book, "The Climates of the United States," to the Society ; so that to any person who contributes $1.50 or more will be sent a copy of Dr. Denison's valuable book, which shows the climates in colors, so we can give full value re-

ceived and a year's membership in the Society. We now have 150 members, several of them fully paid-up life members of $100 each; 10,000 members at $1 each would enable the Society to rescue a very large number during the current year.

W. P. ROBERTS, M.D., *Secretary.*

RUFUS L. THURSTON, M.D., *President.*

THE UTILIZATION OF GARBAGE.

To the Editor of THE SANITARIAN.

DEAR SIR: I read with much interest in the February SANITARIAN a paper read by Dr. Bruno Terne before the Franklin Institute in June, 1893, on "The Utilization of Garbage." But he does not explain his methods to reach the results mentioned except in a general way—viz., "The separation of grease by extraction and the drying of the remainder to form directly a salable product." Now, if this can be done expeditiously and profitably, it would not only be a benefit to the tiller of the soil, but would abate the great nuisance of filling up New York Bay with noisome filth, with the running in of sludge acid, which is the *real cause* of driving food fish from its waters.

Having been largely engaged for fourteen years in fertilizing products, and introduced the drying of menhaden fish pumice, which has, in this country, superseded to a great extent Peruvian guano, the difficulties of drying economically large quantities of bulky articles of low values have been practically realized.

Machines which will dry or desiccate fruits or other high-priced materials are valueless in drying garbage, because, while drying a few tons of fruit daily would be profitable, that daily quantity of garbage would not pay expenses.

For example, the daily quantity of garbage of New York and Brooklyn is at least 1000 tons, and at the estimate of Dr. Terne it would contain 15 per cent of grease to be extracted. It requires five handlings to place it in the extractors and remove it into the evaporators, and from thence to the storage sheds; then it has to be put into bags and barrels, weighed and shipped.

The usual evaporating capacity of coal in large furnaces is about one pound of coal to evaporate eight pounds of water. By scientific tests, under the best conditions, eleven pounds of water have been evaporated by one pound of coal at Woolwich. In materials containing 15 per cent of fat the best results have been, so far as I know, one pound of coal to six and a half pounds of greasy waters. The naphtha process possibly is cheaper, but very dangerous, and hence would not be allowed in cities. Hydro-carbon oils for fuel can be used at less cost than coal or naphtha. Now, if the garbage of New York and Brooklyn had to be disposed of in this way, it is apparent that the plants necessary to effect it promptly, before the mass would begin to ferment, would be of enormous capacity—otherwise the extracting or evaporating process is far more difficult.

Fifteen per cent of grease to be extracted from 1000 tons of garbage would be equal to 150 tons daily, leaving 850 tons, from which 70 per cent would have to be evaporated to bring it down to *eight per cent* of moisture, instead of 4.41 per cent, as given in Dr. Terne's figures, because, if dried down to this, it would reabsorb up to 8 per cent moisture from the atmosphere at ordinary conditions, so it is waste of fuel to dry it down lower. This would then net 255 tons of dry material. Now, if this material at 4.40 per cent of moisture would show but 3½ per cent of ammonia, at 8 per cent of moisture it would only show a little over 1¾ per cent of ammonia, which, at $2.30 per unit of ammonia—the present quotations—would only be $4.02½ per ton. But the low percentage in phosphoric acid—potash, as given in Dr. Terne's analysis—I am afraid would not be considered merchantable; for at present the agriculturists of the country are awakening to the fact that it is not so much ammonia which the plant can absorb through their leaves (lungs) from the atmosphere that is wanted in a fertilizer, as it is phosphoric acid, potash, and lime, which render the earth silicates soluble and absorbable by plants, to give strength to their stalks and life to develop their growth. So that ammonia (except in trucking) as a basis of value in a fertilizer is now being largely discounted.

On the basis of 1000 tons per diem treated as indicated in

the foregoing, the following results show that it may be done advantageously if a market could be found for the products:

Grease suitable for lubricating and rough soap about:	
150 tons at $8 per ton (Grease)	$1200
255 " " $4 " " (Fertilizer)	1020
	$2220
I figure using oil as fuel, handling, etc.	1405
Per day	$ 715

Certainly this is alluring enough to capitalists if a market could be found; and possibly the fertilizer would sell readily at an advanced price if so treated as to bring up its percentage of phosphoric acid and potash. It is a great question of practical sanitation as well as commercial interest, and I hope to see it practically tested. Respectfully yours,

LOUIS C. D'HOMERGUE.

BROOKLYN, February 10, 1894.

PERAMBULATING NUISANCES.—Judge Dixon, of New Jersey, in a charge to the grand jury of Paterson, a few years ago, said: "If a man, conscious that he carries about with him the germs of a contagious disease, recklessly exposes the health and lives of others, he is a public nuisance and a criminal, and may be held answerable for the results of his conduct. If death occurs through his recklessness, he may be indicted for manslaughter. It is held that where a person knowingly communicates a contagious disease to another, and death results, the crime is that of manslaughter. . . . The man may be indicted also for spreading the disease by conscious exposure of others thereto by his presence in public places—such as on the streets, in halls, etc. He might be indicted as a public nuisance for endangering the public health in this way, even if no consequences had followed. The law provides some penalty for such offences against the public safety."—*Medico-Legal Journal, Vol. I., p.* 394.

A NATIONAL BOARD OF HEALTH.

(Revision of and proposed substitute for other bills now before Congress, for the establishment of a national health service.)

A BILL to establish a national board of health, to provide for the investigation and prevention of communicable diseases in the United States, to prevent their introduction from one State or Territory into another, and to co-operate with the Marine Hospital Service to prevent the introduction of such diseases into the United States from foreign countries.

Be it enacted by the Senate and House of Representatives of the United States in Congress Assembled:

SECTION 1. That there shall be established in the Treasury Department, under the direction and supervision of the Secretary thereof, a national board of health, to consist of nine physicians of good standing, of not less than ten years' practice, and recognized as sanitary scientists, appointed by the President, by and with the advice and consent of the Senate, one from each of the nine judicial districts of the Supreme Court of the United States, who shall be required to devote the whole of their time to the duties of their office and shall receive a salary of five thousand dollars each per annum. The members of the said Board shall meet at such time and place as may be designated by the Secretary of the Treasury, and organize by the election from their own number of a president and secretary.

SEC. 2. That the duties of the National Board of Health shall be to collect and diffuse information upon all matters affecting the public health; to advise the several departments of the Government, the executives of the several States, and all health authorities on all questions submitted to it, or whenever in the opinion of the said Board such advice may tend to the preservation and improvement of the public health: to secure the best sanitary condition of vessels, crews, and passengers departing from domestic ports, and from all foreign

ports hither; to prevent the transportation of contagious and infectious diseases abroad; to prevent their introduction from foreign countries into the United States, and to prevent their spread from one State or Territory into another; to co-operate with and aid State and municipal health authorities in the execution and enforcement of rules and regulations to suppress contagious and infectious diseases; and, in general, to be the medium through which the General Government shall adopt such measures and take such action as will most effectually protect and promote the health of the people of the United States.

SEC. 3. That the National Board of Health may, with the approval of the Secretary of the Treasury, make investigations, both in the United States and, if necessary, in foreign countries, into the nature, origin, and prevention of contagious, epidemic, and other diseases, as well as the causes and conditions of particular outbreaks of disease in the United States, and may publish and distribute documents relating to the prevention of disease.

SEC. 4. That to enable the National Board of Health to acquire and have in its possession for distribution information on all subjects affecting the public health which require accurate and reliable scientific investigations, the Board is hereby authorized, with the approval of the Secretary of the Treasury, to engage the services of experts in such laboratories in the United States as are best adapted by location, equipment, or special fitness to prosecute and complete the investigations required.

SEC. 5. That it shall also be the duty of the National Board of Health to obtain information of the sanitary condition of foreign ports and places from which contagious and infectious diseases are or may be imported into the United States, and to this end the consular officers of the United States at such ports and places as shall be designated by the National Board of Health shall make to said Board weekly reports of the sanitary condition of the ports and places at which they are respectively stationed, according to such forms as said Board may prescribe; and the Board shall also obtain, through all sources accessible, including State and municipal sanitary authorities throughout the United States, weekly reports of

the sanitary condition of ports and places within the United States; and shall also, as far as it may be able, by means of the voluntary co-operation of State and municipal authorities, of public associations, and private persons, procure information relating to the climatic and other conditions affecting the public health, and the existence of epidemic, endemic, and other diseases; statistics relating to marriages, births, and deaths.

SEC. 6. That the Board shall prepare, publish, and transmit to the medical officers of the Army, Navy, and the Marine Hospital Service, to collectors of customs, and to State and municipal health officers and authorities, weekly abstracts of the consular sanitary reports and other pertinent information received by the Board of Health.

SEC. 7. That whenever any department of Government, or the executive of any State or Territory, or the authorities of the District of Columbia, or the health authorities of any State, Territory, or municipality, shall request information from the National Board of Health in regard to any matter pertaining to the protection or promotion of the public health, said Board shall promptly furnish such information as it may have on record, together with any necessary or pertinent advice; and whenever information shall be received by the Board which the interests of the public health require should be promptly communicated to any department of the Government, or to any State, Territory, or municipal officer, such information shall be forthwith furnished to the respective department or officer.

Notification of Epidemic Diseases.

SEC. 8. That the National Board of Health shall take such action by correspondence or conference as will tend most effectually to secure the co-operation of State, municipal, and local boards of health in establishing and maintaining an efficient and accurate system of notification of the existence and progress of contagious and infectious diseases in the United States, and said Board shall also by co-operation with the proper health authorities of foreign nationalities and municipalities endeavor to extend to the United States a re-

liable system of international notification of the existence and progress of such diseases as cholera, yellow-fever, typhus-fever, and small-pox.

Securing the Best Sanitary Condition of Vessels.

SEC. 9. That the National Board of Health shall make such rules and regulations, with the approval of the Secretary of the Treasury, as are necessary to be observed by vessels clearing from domestic ports and on the voyage, and by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place, to secure the best sanitary condition of all such vessels, cargoes, passengers, and crews which shall be published and communicated to and enforced by direction of the Secretary of the Treasury, and by the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel, or owner or officer thereof, until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days, in the port from which said vessel sailed; and the certificate of such consul or consular officer over his official signature shall be competent evidence of such posting in any court of the United States.

SEC. 10. That the National Board of Health shall, with the approval of the Secretary of the Treasury, from time to time issue to the consular officers of the United States, and to the medical officers serving at any foreign port, and otherwise make publicly known, the rules and regulations made by it, and approved by the Secretary of the Treasury, to be used and complied with by vessels in foreign ports for securing the best sanitary condition of such vessels, their cargoes, passengers, and crews, before their departure for any port in the United States, and in the course of the voyage, and all such other rules and regulations as shall be observed in the inspection of the same on the arrival thereof at any quarantine station at the port of destination, and for the disinfection and isolation of the same, and the treatment of cargo and persons on board, so as to prevent the introduction of cholera, yellow-fever, or other contagious or infectious diseases.

Preventing the Introduction of Contagious and Infectious Diseases.

SEC. 11. That it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States except in accordance with the provisions of this act, and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof shall forfeit to the United States a sum, to be awarded in the discretion of the court, not exceeding five thousand dollars, which shall be a lien upon said vessel, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States District Attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 12. That any vessel at any foreign port clearing for any port or place in the United States shall be required to obtain from the Consul, Vice-Consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things stated therein are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulation be allowed, to be accounted for as is required in other cases.

The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of furnishing information and making the inspection and giving the bills of health hereinbefore mentioned. Any vessel clearing and

sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars, the amount to be determined by the court, which shall be a lien on the same, to be recovered by proceedings in the proper district of the United States. In all such proceedings the United States District Attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 13. That it shall not be lawful for any vessel to enter any port of the United States to discharge its cargo, or land its passengers, except upon a certificate of the Health Officer at such quarantine station certifying that said rules and regulations have in all respects been observed and complied with, as well on his part as on the part of the said vessel and its master, in respect to the same and to its cargo, passengers, and crew; and the master of every such vessel shall produce and deliver to the Collector of Customs at said port of entry, together with the other papers of the vessel, the said bills of health required to be obtained at the port of departure, and the certificate herein required to be obtained from the Health Officer at the port of entry; and that the bills of health herein prescribed shall be considered as part of the ship's papers, and when duly certified to by the proper consular or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

SEC. 14. That the National Board of Health, with the approval of the Secretary of the Treasury, shall have authority to forbid entry of vessels from ports known or suspected to be infected with cholera, yellow-fever, small-pox, or other declared quarantinable disease into all minor approaches to a port of entry or into any inlet or place within the jurisdiction of the United States not provided with a complete quarantine plant, in order to compel such vessels to be subjected to maritime sanitation at the quarantine station equipped for that purpose and commanding the scope of region in question.

SEC. 15. That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the same, the Board may remand said vessel, at its own expense, to the nearest national or other quarantine station where accommodations and appliances are provided for the necessary disinfection and treatment of the vessel, passengers, and cargo; and after treatment of any infected vessel at a properly equipped quarantine station, and after certificate shall have been given by the Quarantine Officer at said station that the vessel, cargo, and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be admitted to entry to any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State or local authorities, the Board may direct vessels bound for said ports to undergo quarantine at said State or local station.

Preventing the Spread of Cholera and Yellow-Fever from One State into Another.

SEC. 16. That whenever it shall be made to appear to the Board that cholera or yellow-fever exists in any State or Territory and that there is danger of the spread of such disease by the usual channels of transportation to other States and Territories, the Board is authorized to adopt such rules and regulations with the approval of the Secretary of the Treasury, as, in its judgment, may be necessary in order to prevent the spread thereof from one State or Territory to another, and to employ such inspectors and other persons as may be necessary for the purpose aforesaid, and any person who shall knowingly disobey or violate any order, rule, or regulation made pursuant to the authority herein conferred shall be deemed guilty of a misdemeanor, punishable by a fine of not less than five hundred dollars and by imprisonment for a period of not less than one year.

SEC. 17. That rules and regulations framed and approved as herein authorized shall be promulgated, so that when cholera or yellow-fever shall be ascertained by the Board to exist in any port or place within any one of the United States or Territories, or the District of Columbia, in such form as threatens its spread, as to prevent, as far as practicable, the

communication of the same to other ports and places within other States by means of vessels and vehicles engaged in the transportation of goods or passengers between two or more States, or States and Territories, and the District of Columbia, whether by land or water; in that case, the Board may select suitable localities for establishing stations on rivers and other lines of inter-State commerce and travel by railroads, and may cause to be erected necessary temporary buildings for the disinfection of passengers, baggage, cargoes, vessels, and vehicles, and may enforce such rules and regulations relating thereto as may have been prescribed therefor. It shall be the duty of the Board, so far as it lawfully may, in the execution of the powers conferred upon it by law, to correspond and co-operate with similar local officers, boards, and authorities acting under laws of the States, or Territories, or the District of Columbia, in sanitary measures, to prevent the introduction and spread of contagious and infectious diseases from foreign countries into the United States, and from one State or Territory into any other State or Territory by means of commercial intercourse, or upon and along the lines of inter-State trade and travel; and to that end it shall be lawful for the Board to confer upon any such local officer or board within or near the locality where his or its authority is exercised, power also to enforce the provisions of this act and any rules and regulations made in pursuance thereof.

Aid of State and Municipal Health Authorities.

SEC. 18. That the Board shall, under the direction of the Secretary of the Treasury, co-operate with and aid State and municipal health authorities in the execution and enforcement of the rules and regulations of such authorities, and in the execution and enforcement of the rules and regulations made by the Board and approved by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia; and all rules and regulations made by the Board and approved by the Secretary of the Treasury shall operate uniformly and in no manner discriminate against any port or place; and at such

ports and places within the United States as have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Board, necessary to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Board, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, the Board shall, if in its judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Board and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations, the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose.

Employment of Experts.

SEC. 19. That the President is authorized, when requested by the National Board of Health, and when the same can be done without prejudice to the public service, to detail officers from the several departments of the Government for temporary duty, to act under the direction of said Board, to carry out the provisions of this act; and such officers shall receive no additional compensation except for actual and necessary expenses incurred in the performance of such duties. When a detail of suitable officers cannot be made, the Board may,

with the approval of the Secretary of the Treasury, employ such experts and for such time and in such manner as the exigencies of the Service may require.

SEC. 20. That whenever the proper authorities of a State shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Board shall cause an examination thereof to be made by its own members, or by a competent person, or persons, and if the said station, buildings, and disinfecting apparatus he found adapted to the purposes of a quarantine, and the Board approve of their use as such, the Secretary of the Treasury shall be authorized to receive them, and to pay a reasonable compensation to the State for their use.

SEC. 21. That there shall be an Advisory Council, to consist of the surgeon-generals of the Army, Navy, and Marine Hospital Service, and the executive officers of the State and Territorial boards of health, who shall be required to meet with the National Board of Health at least once annually, and as much oftener as the President may direct in the event of any emergency requiring concerted action. The members of the Council, being salaried officers, shall only be paid their travelling expenses for attendance.

SEC. 22. All questions of law shall be referred to the Law Department of the Government.

Extraordinary Power given to the President.

SEC. 23. That whenever the National Board of Health shall certify to the President, and it shall appear to his satisfaction that, by reason of the existence of cholera or other infectious or contagious diseases in a foreign country, there is serious danger of the introduction of the same into the United States, and that notwithstanding the quarantine defence this danger is so increased by the introduction of persons or property from such country that a suspension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places as he shall designate, and for such period of time as he may deem necessary.

Special Appropriation.

SEC. 24. That there shall be, and hereby is, appropriated, out of any moneys in the Treasury not otherwise appropriated, the sum of one million dollars, to be expended, or so much of the same as may be necessary from time to time, under the direction of the President and according to his discretion, to meet emergencies arising in the execution of the provisions of this act.

Report, Printing, etc.

SEC. 25. That the National Board of Health shall make an annual report of its operations to the Secretary of the Treasury, who shall transmit the same to Congress, with such recommendations as he may deem important to the public interests; and said report, if ordered to be printed by Congress, shall be done under the direction of the Board; and that all mail matter of whatever class relative to the National Board of Health and its duties, and addressed to its secretary and endorsed "Official Business, National Board of Health," shall be transported free of postage; and if any person shall make use of any such endorsement to avoid the payment of postage on his private letter, package, or other matter in the mail, the person so offending shall be guilty of a misdemeanor, and be subject to a fine of five hundred dollars, to be prosecuted in any court of competent jurisdiction.

SEC. 26. That so much of the Act of 1893, *granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service*, as makes it the duty of the Supervising Surgeon-General of the Marine Hospital Service to supervise the quarantine regulations, to obtain information of the sanitary condition of foreign ports, to publish weekly abstracts of the consular reports and perform other duties provided for in this Act, and all other parts of the said Act of 1893 and other acts as are inconsistent with the provisions of this Act, are hereby repealed.

NATIONAL REGISTRATION A NECESSITY.*

By SAMUEL W. ABBOTT, M.D., Boston.

IN the present paper it is my design to state briefly some of the reasons for the adoption of a system of registration of vital statistics in each one of the United States—such a system as now exists in nearly every enlightened nation, the United States as a whole forming a marked exception.

Dr. Curtis, in a very intelligent discussion of the general subject of vital statistics, says: "A full and accurate knowledge of the people in every community is an indispensable requisite for the successful administration of public affairs. Such knowledge is obtained by the public authorities, from two distinct sources. In the first place, the enumeration of the people, by which the population, the numbers, the ages, the abodes, the professions, etc., of the individuals composing it are ascertained, is effected by the taking of a census. In the second place, 'the movement of the population,' under which term are comprehended the births, marriages, and deaths occurring yearly, is determined by registration." †

Dr. Ogle states the objects of registration as follows:‡ "(1) There are all the legal uses, where proof of death is required, such as the succession of property, payment of insurance moneys after death, etc.; (2) there is the prevention of or interference with murder or foul play generally; (3) the provision of trustworthy data for the elaboration of statistics concerning health, disease, and mortality."

The purposes of registration are manifold, and their importance emphasizes the necessity of having this department of statistical work conducted in the most thorough and intelligent manner.

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* A paper read at the World's Congress of Hygiene, at Chicago, October 12, 1893.

† Buck's "Hygiene," vol. ii., p. 302.

‡ Evidence before the Parliamentary Committee on Death Certification, June 3, 1893.

It serves, in the first place, to facilitate the identification of individuals for the transmission of property and for the protection of life against crime.

Second, it affords data for the determination of life contingencies, which form the basis of life insurance. Sufficient importance has never been given to this use of the statistics of mortality in this country. The figures upon which this very great and important business (amounting to many millions in each year and affording protection reckoned even by billions) is founded, can only be obtained in this country from a very small portion of the people, having registration extending over a long period of years.

But, third, and most important of all, it furnishes to sanitary science, and to the medical profession in general, most valuable information regarding the public health.

With these facts in view it is a sad comment upon the civilization of a great nation, that sixty-five millions of people are to-day entirely without any general system of registration of vital statistics; that the birth-rate, the death-rate, and the marriage-rate of this country as a whole are absolutely unknown.

There is no information to be had, for example, as to the birth-rate or the death-rate of this great State of Illinois, within whose limits we are assembled, the third State of the Union in its population of more than four millions. We have absolutely no means of comparing the death-rate of Chicago with that of the rural population of the remainder of the State; since, while the former is known with some degree of certainty, the latter is unknown. There is no means of comparing the death-rates of any of the counties of the State (or of larger districts) with each other.

Of the foreign countries, most of the largest and enlightened nations of Europe have had registration of a more or less complete character for periods varying from a quarter to a half century or more. It is a matter of great importance in the study of nations that their conditions and circumstances may be compared with each other. But in this very important direction we, as a nation, have no possible means for making such a comparison. When individual States are considered, we find a little improvement. States embracing about twelve

per cent of the population of the whole country have fairly complete systems of registration ; while other States, having about as many more inhabitants, have enacted adequate laws, but thus far the execution of these laws is not fully carried out.

What then is needed to introduce and perfect a thorough system of registration throughout the whole country from Maine to Oregon, and from the Gulf to the Great Lakes?

1. The enactment of laws in every State providing for the registration of births, marriages, and deaths. The more uniform such laws can be made with reference to the information to be obtained in individual certificates, the better.

2. The cordial co-operation of the general government in providing a central authority for the collection and publication of the statistical material of the individual States. Possibly grants might be made to the younger States to facilitate the introduction of this very important work.

3. The necessity of awakening the interest of the medical profession in this work and the need of their hearty co-operation in aiding it in every possible manner is apparent. To this end the raising of the standard of medical education will have a favorable effect. The teaching of vital statistics, as an essential part of medical and especially of sanitary education, should be urged.

4. The placing of the work of registration in the hands of trained medical men, who should act as registrars. These should not only be medical men, but also men who are experts in the subject of vital statistics at least. This principle is recognized by all the foremost authorities in public hygiene. No one doubts for a moment the wisdom of the British Government in entrusting the registration of England to such men as Dr. Farr and Dr. Ogle. And the same may also be said of the French and German governments. Due authority should be given to the registrars of States and of municipalities to examine the returns of death carefully, and to institute inquiries in all doubtful cases, especially when the certificates are signed by unqualified practitioners.

5. In addition to the foregoing considerations, a revision of the nomenclature and classification of diseases is demanded, which shall be in harmony with the progress of medical sci-

ence. Such revision, whenever it shall be made, should be uniform throughout all countries having registration, in order to facilitate the international comparison of the results obtained by registration.*

While the accurate registration of all deaths embraced under the five general divisions or classes of disease is desirable, there is one class which has a peculiar interest to the sanitarian, and that is the group of infectious diseases, or those to which for a half century the name "zymotic" has been applied. The diseases of this class, or at least a majority of them, are undoubtedly amenable to those preventive measures which constitute a large share of the work of sanitary authorities. Hence all such authorities must necessarily recognize the great importance of having a definite knowledge as to the mortality from infectious diseases from month to month, and from year to year. Such knowledge can only be had under a careful system of registration thoroughly carried out. To this class of diseases belong typhoid-fever and phthisis,† diseases which destroy life during its most productive period, and hence involve a great economic loss to the population. The steady decline in the mortality from these diseases in cities and towns having such municipal sanitation as is required is too well recognized to require lengthy comment here. But without a good system of registration the question of improvement or of retrogression could not be known with any degree of certainty.

Legislatures are slow to act when definite, tangible evidence or statements as to the actual results accomplished by sanitation are not to be had. Hence the importance of establishing such thorough and complete systems of registration as shall furnish the desired information.

The relation of the vital statistics of any community to the public-health administration of that community is very much like the relation which the counting-house of any commercial firm bears to its business. The business may be great or small; it may conduct commercial transactions over a very

* See Transactions of the Massachusetts Medical Society, 1892.

† By almost universal consent, phthisis should be included in the category of infectious diseases.

large extent of territory; it may own property, factories, or mills in different manufacturing towns; it may employ large or small numbers of workmen; but, if it is desirable to obtain any definite information as to the extent or character of its operations, their success or failure, one must go to the counting-house or the business office, where he can obtain full and accurate knowledge of the standing of the firm, of the amount of its business, and of its plans and methods. The assets and liabilities of the firm are here matters of record; and its journal and ledger, its daily, weekly, monthly, and yearly balance sheets tell us of the actual condition of its business.

Applying this illustration to the operations of a sanitary authority, the vital statistics of any community tell us its actual progress or retrogression in the excess of births over deaths, or, *vice versâ*, of deaths over births. The changes, too, in the death-rates from preventable diseases both individually and collectively are instructive, as showing to a certain extent the results of thorough and efficient sanitary work. They constitute the sanitary barometer by which not only present conditions are known, but also with some degree of certainty, future conditions may be foretold.

Let the following facts serve as an illustration:

Upon a comparatively large river in my own State are some half dozen manufacturing cities and towns. Let these cities and towns be represented as follows: A, the cities and small towns upon the upper portion of the stream (embracing 300,000 inhabitants); B and C, two larger cities upon the lower portion of the same stream; D, a smaller city near its mouth. The entire population upon the water-shed of this river is about a half million inhabitants.

The State Board of Health collects information weekly from the cities and towns within the limits of the State, as to the mortality from infectious diseases, including the cities and towns upon this river. It is also authorized by law to examine all the water supplies of the State, a work in which it is continually engaged. The statutes forbid that streams used as water supplies shall be used for the discharge of sewage; but the river in question is exempted by law from the operation of this statute, and sewage goes into it without hindrance from A, B, C, and D. Now B and C take the water of this

river directly and without filtration for domestic use. Sewage from A enters the water supply of B; sewage from A and B enters the water supply of C. As might be expected under this condition of affairs, typhoid-fever has become more than epidemic at B and C, the mortality from this cause bearing the following ratios for the twenty years (1871–90): The typhoid death-rate of the State being taken as 100, that of B was 155, and that of C was 170, while in the last five years of this period the excess rate was still greater. Any slight prevalence of typhoid-fever in the sewered portions of cities and towns included in A was pretty sure to be followed by a greatly increased prevalence in B and C.

Up to the fall of 1892 the water supply of the small city D was not taken from the river, but from a spring upon its shore. During the dry season of 1892 this spring became inadequate, and the water supply which was furnished by a private company was increased by extending a water pipe to the river and supplementing the supply directly from that source. In the frequent routine examinations of the water supplies conducted by the State Board of Health, this fact became known to the Board, in consequence of the immediate change in the quality of the water as shown by its analysis. Under these circumstances the Board immediately warned the water company of the danger of using water from a constantly polluted stream into which the sewage of a population of several hundred thousand was discharged. The company took no notice of this communication, but continued pumping water from the river and distributing it to the inhabitants. What was the result? In less than two months an epidemic of typhoid-fever attacked the population using this water, more severe in character than had been known in that city for a half century. It so happened that this event occurred during or at the beginning of the session of the State Legislature. The citizens were soon aroused to a sense of the danger of the situation. The Mayor appealed to the Legislature for such aid as proper legislation might afford; and while the franchises of water companies have usually been guarded with jealous care, in this instance the flagrant disregard of the admonition which had been given them and the consequent sickness and death of many citizens, which might have been

avoided, had they not neglected the advice of an experienced authority which had thoroughly examined the whole situation, induced the Legislature to give to the city the right to introduce an independent supply, and at the time of this writing (October, 1893) the city has, by an overwhelming majority, voted to take this action.

I have presented this illustration, not so much for the purpose of showing what might have been done in preventing sickness and loss of human life under circumstances of careful observation, followed by advice to a responsible corporation and an obedient following of such advice, but for the purpose of showing the usefulness of a careful system of vital statistics, embracing a weekly return from the cities and towns along the banks of this river, of the deaths and causes of death, by which a warning reaches the State Board of Health and may be by it transmitted to the local boards, of the existence of unusual prevalence of epidemic disease.

About a quarter of a century ago the death-rate of England was constantly higher than it is at the present day. It was noticed that this high death-rate was mainly in the large towns and cities. Sanitary works were introduced in these cities, embracing new water supplies, systems of sewerage and disposal of refuse, etc., and very soon the death-rate was diminished in nearly every city in which such improvements had been introduced.*

Now the point which I desire to enforce is not so much the fact of such improvement as a natural consequence of thorough sanitation, but the method by which this fact was ascertained. The foundation or basis upon which the general public movement for these improvements rested, and which justified their introduction, was the death-rate of the cities in question. The computation of this death-rate and the comparison of the mortality before and after the introduction of public sanitary improvements was made possible only by the existence throughout the whole country of a complete and accurate system of registration.

Again the possibility of conducting such valuable and instructive investigations as are presented in Dr. Longstaff's

* Ninth Report of the Privy Council, England.

"Studies in Statistics," and in the older papers of Buchan and Mitchell, is only made certain by the existence of a system of registration.

In this connection I desire to call your attention to one class of causes of death which is more or less preventable, although not in the same sense and degree as the group of infectious diseases; I mean the class of deaths by violence. All measures which tend to ameliorate the condition of man, to lessen suffering, poverty, and intemperance, to protect life and to make it more secure from danger, will thereby diminish the annual mortality from homicide, suicide, and accident. In the State of Massachusetts, by a statute of 1885 the registration of this class of deaths was made much more thorough and complete than it had previously been. At a still earlier date (1877) the coroner system had been abolished as a useless relic of antiquity, and an entirely new method of inquiry was introduced, which was modelled after the better modes in operation in continental Europe.

The new plan of procedure provides for the separation of the medical from the legal duties connected with the investigation of deaths by violence, the former being entrusted to a corps of well-trained medical examiners, while the latter are performed by the district judges. The operation of this system for a period of fifteen years has been entirely satisfactory. It is at once more economical and far more efficient than the coroner system which it superseded, and no one at the present day desires to return to the old method.

I would therefore commend this mode of investigation, together with the improved system of registration which now constitutes a part of the general plan, as suited to the wants of any community comprising either a large or a small population.

To conclude, a thorough system of registration is not only a valuable auxiliary, but is a natural and essential department of the work of any general sanitary authority; and in every State where no provision is made for the collection, tabulation, and publication of the vital statistics of the population, measures should be taken with the least possible delay for the carrying out of this important public duty.—*Boston Medical and Surgical Journal, February 8th*, 1894.

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of December a mortality of 81, of which 45 were colored, and 13 were under five years of age. The annual death-rate per 1000 was 31.20.

Zymotic diseases caused 8 deaths, and consumption, 9.

ARKANSAS.—D. W. Holman, Secretary, Little Rock.

CALIFORNIA.—J. R. Laine, M.D., Secretary, Sacramento. Reports from 90 cities, towns, villages, and sanitary districts, aggregating a population of 814,739, show a total mortality of 1105 from all causes during the month of December. This corresponds to a death-rate of 1.35 per 1000 per month, or 16.20 per 1000 per annum.

There were 161 deaths due to consumption, 112 to pneumonia, 46 to bronchitis, 11 to congestion of the lungs, 10 to diarrhœa and dysentery, 6 to cholera infantum, 56 to other diseases of the stomach and bowels, 28 to diphtheria and croup, 4 to scarlatina, 5 to whooping-cough, 33 to typhoid-fever, 4 to malarial fevers, 6 to cerebro-spinal-fever, 30 to cancer, 5 to erysipelas, 96 to heart disease, 13 to alcoholism, and 479 to all other causes.

San Francisco, 330,000: Total mortality, 503. Consumption, 78.

Sacramento, 30,000: Total mortality, 32. Consumption, 3.

Los Angeles, 65,000: Total mortality, 115. Consumption, 18.

"Los Angeles reports (for September) 5 deaths from typhus-fever. Up to this time it was not generally known that this extremely contagious disease had obtained a foothold in California. Los Angeles population, 65,000: total

mortality, 82, consumption, 82."—SANITARIAN, *December*, 1893.

"It is very evident that a typographical error is responsible for the figures which make all the deaths which occurred here last September due to consumption, as the number should be 12 instead of 82. The mistake of confounding typhus with typhoid-fever must be charged to THE SANITARIAN'S correspondent. All the folks here are not one-lungers, nor are we so anxious to become a health resort as to welcome typhus-fever in our midst. Our statistical reports, taken on their face, are bad enough, and if unqualified, are very misleading as to the true condition of affairs. Statistics compiled and published by us in June, 1893, show that the apparent mortality from phthisis here is vastly more than what is actually chargeable to this region—only one in fifty being natives of this city—and while one death in four is caused by consumption, hardly one in forty contracted that disease here. From a careful investigation as to the state of health of patients on their arrival in California, counting hemorrhage, persistent cough, wasting, and advice to go to California for their health, as proof that they came here with phthisis, we came to the conclusion in 400 odd cases of personal observation, by some member of our staff, that only 10 per cent contracted the disease in California. We respectfully refer THE SANITARIAN to an article entitled 'Apparent and Actual Mortality,' published in the *Practitioner* last June, containing data which show how we ought to be regarded rather than how we are looked upon."—*Southern California Practitioner for January*, 1894.

The misprint of 82 instead of 12, overlooked in proof, is so evident as to be at once apparent. The report of *typhus* instead of typhoid-fever was made and subsequently corrected by the Health Officer of Los Angeles, as published in our January number.—H. K. B.

CONNECTICUT.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for December was received from 167 towns in the State, in a population of 796,870.

There were 1323 deaths reported during the month. This

was 285 more than in November, and 282 more than in December, 1892, and 190 more than the average number of deaths in December for the five years preceding the present.

The death-rate was 19.9 for the large towns; for the small towns 19.8 and 19.9 for the whole State.

The deaths from zymotic diseases were 187, and from consumption, 134. Twelve towns reported no deaths.

In the whole year the number of deaths was 14,594, being 259 less than in the last year, and 1184 more than the average for the last five years.

New Haven, 90,000: Total mortality, 191. Annual death-rate per 1000, 25.3.

Bridgeport, 58,243: Total mortality, 86. Annual death-rate per 1000, 17.3.

Hartford, 56,000: Total mortality, 128. Annual death-rate, 27.4 per 1000.

Waterbury, 38,500: Total mortality, 63. Annual death-rate, 19.7 per 1000.

Meriden, 26,510: Total mortality, 31. Annual death-rate per 1000, 14.0.

Norwich, 24,200: Total mortality, 45. Annual death-rate per 1000, 22.3.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the four weeks ending January 31st a mortality of 437, of which number 171 were of colored people, and 112 were under five years of age. The annual death-rate was 19.91 per 1000. There were 98 deaths from zymotic diseases, and 58 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of November, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 513; number of marriages reported, 412; number of deaths reported, 339; birth-rate

per 1000 per annum, 15.72 ; death-rate per 1000 per annum, 10.39 ; average age of decedents, 34.83 ; number of deaths under five years of age, 85. Deaths from zymotic diseases numbered 57, and from consumption, 47.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000 : A. R. Raynolds, M.D., Commissioner, reports 2036 deaths during December, representing an annual death-rate of 15.27 per 1000.

The mortality under the age of five years was 757. The deaths from zymotic diseases numbered 300, and from consumption, 210.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

The *Monthly Bulletin* makes the following report for December :

Cedar Rapids, 25,000 : Mortality, 21. Death-rate per 1000, 9.6.

Clinton, 22,000 : Mortality, 24. Death-rate per 1000, 16.8.

Council Bluffs, 35,000 : Mortality, 21. Death-rate per 1000, 8.88.

Davenport, 34,000 : Mortality, 60. Death-rate per 1000, 21.12.

Des Moines, 75,846 : Mortality, 44. Death-rate per 1000, 6.48.

Dubuque, 40,000 : Mortality, 25. Death-rate per 1000, 7.44.

Sioux City, 37,500 : Mortality, 19. Death-rate per 1000, 6.0.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—L. F. Salomon, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored.

There were reported for three weeks ending January 20th, 436 deaths, of which number 161 were among the colored people, and 85 of children under five years of age. There were 72 deaths due to zymotic diseases, and 61 to consumption. The annual death-rate was 30.21 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427: James F. McShane, M.D., Commissioner, reports for December that the total deaths were 846, an increase of 83, compared with the corresponding month of December, 1892. Of these 671 were whites and 175 colored; a death-rate of 20.96 per 1000 for the former and 29.58 per 1000 for the latter. The death-rate per 1000 for the whole population was 22.32. Thirty-four died from infectious diseases, 102 from consumption, 113 from pneumonia, 37 from bronchitis, 44 from influenza, and 12 from typhoid-fever. Two hundred and fifty-two, or 29.66 per cent of the total deaths, were in children under five years of age.

During the month 137 cases of infectious diseases were reported, a decrease of 4 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.

Boston, 487,397: S. H. Durgin, M.D., Chairman.

There were 1058 deaths reported in December, of which number 293 were under five years of age. The annual death-rate per 1000 was 26.04. There were 175 deaths from zymotic diseases, and 98 from consumption.

During the year 1893 there were 11,710 deaths from all causes, of which 3987 were of children under five years of age. The death-rate was 24.02 per 1000.

The mortality from zymotic diseases was 2042, of which 476 were from diphtheria, 635 from diarrhœal diseases, 499 from cholera infantum, 248 from scarlatina, and 148 from typhoid-fever. Consumption caused 1364, and pneumonia, 1540.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

During the year 1893 action was taken upon 1881 outbreaks

of dangerous communicable diseases, which number includes 540 outbreaks of diphtheria, 674 outbreaks of scarlet-fever, 394 outbreaks of typhoid and typho-malarial-fever, 271 outbreaks of measles, and 2 outbreaks of small-pox.

Compared with the year 1892, action was taken on outbreaks of dangerous communicable diseases as follows: On diphtheria, 44 outbreaks more; scarlet-fever, 18 outbreaks more; on typhoid and typho-malarial-fever, 10 outbreaks more; measles, 136 outbreaks more; and small-pox, the same number as in 1892. In all 208 outbreaks more were acted upon in 1893 than in 1892.

(The number of outbreaks acted upon in 1893 was almost the same as in 1891. The number in 1891 was 1879, in 1893 it was 1881.)

Ten cases of and 3 deaths from small-pox were reported. There were 2 outbreaks of the disease, both during the month of January; one occurred in the township of Springport, Jackson County, which was confined to the first case; the patient was exposed to the disease at Akron, O., where the disease prevailed to a considerable extent during December, 1892, and January, 1893. The second outbreak occurred in Pittsfield Township, Washtenaw County, during which 9 cases and 3 deaths occurred.

Detroit, 230,000: Duncan McLeod, M.D., Commissioner, reports for December 445 deaths, of which 89 were under five years of age.

The annual death-rate per 1000 of population was 20.53.

The deaths from zymotic diseases numbered 54, and from consumption, 19.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing: The mortality record for November was 801 deaths from all causes. Annual death-rate per 1000, 6.42. The principal causes of deaths were: Consumption, 82; diphtheria, 50; croup, 10; pneumonia, 57; bronchitis, 24; typhoid-fever, 50; scarlatina, 17; diarrhœal diseases of children, 23.

St. Paul, 155,000: H. F. Hoyt, M.D., Commissioner, reports for December 136 deaths, of which 45 were under five years of age. The annual death-rate per 1000 was 10.38. There were 39 cases of contagious diseases reported.

Minneapolis, 223,700 : E. S. Kelley, M.D., Commissioner.

During the month of December, 1893, there were 210 deaths, representing an annual death-rate of 9.38 per 1000. Zymotic diseases caused 42 deaths, and consumption, 24. There were 71 deaths under five years of age.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

St. Louis, 520,000 : George Homan, M.D., Commissioner, reports for November, 1893, a mortality of 790, of which 206 were under five years of age. The annual death-rate per 1000 was 18.2.

There were 131 deaths from zymotic diseases, and 64 from consumption.

Kansas City, 122,180 : R. P. Waring, M.D., Health Officer, reports for November, 1893, 152 deaths, of which 56 were under five years of age. Annual death-rate per 1000, 12.16. There were 38 deaths from zymotic diseases, and 16 from consumption.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—Ezra M. Hunt, M.D., Secretary, Trenton.

Paterson, 92,793 : J. L. Leal, M.D., Health Officer, reports for December 183 deaths, 71 of which were under five years of age. The annual death-rate per 1000 was 22.5. There were 37 deaths from zymotic diseases, and 21 from consumption.

NEW YORK.—Lewis Balch, M.D., Secretary, Albany.

The sanitary districts into which the State is divided are as follows : Maritime District : Includes New York, Long Island, Staten Island, and Westchester County. Hudson Valley District : All the counties on either side of the Hudson River, except Westchester, to and including Albany and Rensselaer. Adirondack and Northern District : The north-

ern section of the State—the counties of Washington, Warren, Hamilton, Essex, Clinton, Franklin, St. Lawrence, Jefferson, and Lewis. Mohawk Valley District: Schenectady, Schoharie, Saratoga, Montgomery, Fulton, Herkimer, and Oneida counties. Southern Tier District: The seven counties along the southern border of the State. East Central District: Sullivan, Delaware, Otsego, Madison, Chenango, Onondaga, and Cortland counties. West Central District: Cayuga, Tompkins, Seneca, Schuyler, Ontario, Yates, Livingston, Genesee, and Wyoming counties. Lake Ontario and Western District: Oswego, Wayne, Monroe, Orleans, Niagara, and Erie counties.

There have been 123,908 deaths reported during the year in the *Monthly Bulletins*, 4317 reported too late to be included in the *Bulletins*, and 275 estimated to have occurred in 13 towns failing to make any return, making a total number of deaths in the State for the year 128,500. In 1892 there were 2400 more deaths reported in the *Bulletin* and a total of 2250 more deaths for the year. The death-rate for 1893 was 19.50; in 1892 it was estimated at 20.78; in 1891 at 21.43; in 1890 and 1889 at 19.65.

The infant mortality (under five years) was 33.6 per cent; that of the preceding years was respectively, 33.5, 34.5, 31.6, and 38.6. The zymotic death-rate for the year was 180.00 per 1000 deaths from all causes; that of the preceding years was respectively, 182.87, 178.00, 169.00, and 206.00. Typhoid-fever caused the same ratio of deaths as last year, both being years of comparative freedom from it. From diphtheria there were 5947 deaths; in 1892 and the three preceding years, 5918, 5072, 4915, and 5855; it has been most fatal during the fall months. Scarlet-fever caused 1626 deaths (2177 in 1892 and 2254 in 1891). Measles caused 789 deaths, about half the number of 1892 and the fewest of any year on record. There were 1200 deaths from whooping-cough; in 1892, 920, which is about the average for the past eight years. Diarrhœal diseases caused 9000 deaths, near the uniform average for other years. Deaths reported from cerebro-spinal-fever (875) are more than usual; from malarial diseases (493) less than usual. Small-pox, following two years of almost entire freedom from it, has been continuously preva-

lent in New York City and vicinity since early in 1892, causing 252 deaths (143 in 1892); no deaths have occurred from it outside of the maritime district; but isolated cases occurred at Waterloo, Waterford, Geneva, Warwick, and Newton's Corners, in Hamilton County. Epidemic influenza reappeared early in the year (its fourth recurrence), reached its height in April and caused about 6000 deaths; it again became epidemic in December, when 1000 deaths were attributed to it, and it continues prevalent into 1894 (8000 deaths in 1892). There were 19,800 deaths from acute respiratory diseases (20,432 in 1892); 13,123 from consumption (13,471 in 1892); 13,826 from diseases of the nervous system (14,000 in 1892); 9042 from diseases of the circulatory system (9013 in 1892); 8834 from diseases of the digestive system (8920 in 1892); and 5826 from old age (6385 in 1892). It is on these mainly, and on unclassified diseases, from which there were 14,622 deaths, that the grip falls. There were from all causes 340 deaths daily, as reported in the *Bulletin* (350 in 1892, 335 in 1891, and 325 in 1890).

For the month of December, 1893, the reported mortality has risen from the low daily average of 281 in November to one of 342; this is the highest since August, the mortality for the autumn months having been unusually low, averaging 295 deaths daily, which is less by 3 deaths a day than in 1892. The death-rate for the month is 19.25 per 1000 population. The proportion of deaths under five years of age was 26.7, a smaller relative mortality in early life than has yet been recorded in one month for the entire State. The proportion of zymotic mortality is the lowest for the year, being 117.25 in 1000 deaths from all causes, and is less, both relatively and actually, than in the preceding month. Typhoid-fever caused fewer deaths than in November, which is customary, and the mortality is the same as that of a year ago. Diphtheria caused 678 deaths, the same as in December, 1892, and there is a moderate diminution in the mortality since last month, which applies to all parts of the State except the maritime district. Scarlet-fever shows a slight increase, having caused 106 deaths, the largest mortality since June last; its increase is confined to the eastern districts. Measles increases in New York and vicinity, but hardly exists elsewhere. Small-pox

caused 35 deaths, of which 13 are reported from New York, 1 each in Long Island City and the town of Jamaica, and 20 in the Kings County Hospital for Contagious Diseases, of which 18 came from Brooklyn. Three cases of this disease have recently developed in Troy. Consumption caused about 150 more deaths than in November, and acute respiratory diseases double the number of November, or 2440 deaths. Deaths from nervous diseases and old age are also largely increased. Epidemic influenza has again recurred, and the increased mortality is traceable to it, amounting to fully 1000 deaths from this cause; in December, 1892, it was estimated that 400 deaths were caused by the grip. The weather for the month was rainy, the precipitation being excessive for the first time since August. The temperature averaged below the normal.

New York, 1,860,803: Total deaths, 3527—1302 under five years. Death-rate, 22.30. Zymotic diseases per 1000 deaths from all causes, 153.40. Deaths from consumption, 424.

Brooklyn, 978,394: Total deaths, 1601—517 under five years. Death-rate, 19.24. Zymotic diseases per 1000 deaths from all causes, 106.87. Deaths from consumption, 184.

A mistake was made last month in placing the report of 1893 under the monthly report of Syracuse instead of where it should have been.

SMALL-POX IN NEW YORK AND BROOKLYN.—During the week ending February 10th, 23 cases of small-pox were reported in New York, with 9 deaths, against 22 cases and 4 deaths the previous week. In Brooklyn 9 cases were reported on Monday, February 19th, for the preceding forty-eight hours.

Indeed, at the time of this writing, the prospect of a small-pox epidemic hereabouts, which, besides the loss to the community in sickness and death, is likely to involve the outlay of more thousands of dollars to suppress it than it would now cost tens to prevent it by the vigorous exercise of the functions of the health authorities in requiring universal vaccination, is daily becoming more and more evident.

Syracuse, 91,944: Total deaths, 162—36 under five years.

Death-rate, 21.10. Zymotic diseases per 1000 deaths from all causes, 137.50. From consumption, 18.

Albany, 98,000: Total deaths, 212—46 under five years. Death-rate, 25.86. Zymotic diseases per 1000 deaths from all causes, 132.75. From consumption, 30.

Buffalo, 300,000: Total deaths, 500—158 under five years. Death-rate, 20.35. Zymotic diseases per 1000 deaths from all causes, 158.10. From consumption, 41.

Rochester, 150,000: Total deaths, 238—48 under five years. Death-rate, 18.60. Zymotic diseases per 1000 deaths from all causes, 113.45. From consumption, 41.

Binghamton, 34,514: D. S. Burr, M.D., Health Officer, reports for the year 1893 a mortality of 622, of which 174 were under five years of age. The death-rate per 1000 was 18.02. The principal causes of deaths were: Consumption, 67; acute respiratory diseases, 83; nervous diseases, 93; diarrhœal diseases, 47.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the North Carolina Board of Health we find that during December there were 140 deaths in 24 towns, aggregating 121,504 population; 77 were of colored people, and 29 were of children under five years of age.

The annual death-rates were 10.6 per 1000 for the white population, 18.3 for the colored population, and 13.8 for the total. There were 22 deaths from consumption, 6 from typhoid-fever, 18 from pneumonia, and 8 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 20. Annual death-rate, 20.0 per 1000.

Charlotte, 14,000: Total deaths, 19. Annual death-rate, 16.3 per 1000.

Raleigh, 15,000: Total deaths, 15. Annual death-rate, 12.0 per 1000.

Wilmington, 22,000: Total deaths, 31. Annual death-rate, 16.8 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

The *Monthly Sanitary Record* furnished the following report for the month of November: Forty-six cities and towns, having an aggregate population of 1,162,094, returned 1694 deaths, of which number 442 were under five years of age. The annual death-rate was 15.00 per 1000. Zymotic diseases caused 324 deaths, and consumption, 190.

Seventy-five villages, with an aggregate population of 153,665, returned 240 deaths, of which number 47 were under five years of age. The annual death-rate was 18.74 per 1000. Zymotic diseases caused 66 deaths, and consumption, 31.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

In a communication from the State Board it is stated that the Reading, Berks County, Board of Health reports that 3 new cases of small-pox occurred in that city during the two weeks ending February 5th, 1894. These cases occurred prior to January 26th. The total number of cases in that city since the outbreak in February, 1893, is 713, with 18 deaths to date. Only 7 cases are now in the Emergency Hospital.

An outbreak occurred at Tyrone Forges, Blair County. The inspector reported 7 cases of small-pox and 5 cases of varioloid as existing on February 8th. This epidemic was traced to Reading. One fatal case was reported at Puttstown, traced to Tyrone. One case was reported from Williamsport, origin not known, and 1 case was reported from Wilkinsburg. Five cases were reported in Pittsburg, origin unknown, and 1 case in Philadelphia, origin unknown.

Philadelphia, 1,115,562: M. Veale, Health Officer, reports: In the four weeks ending January 27th, 1894, there were 2268 deaths, of which number 624 were under five years of age. Annual death-rate, 26.50 per 1000. Deaths from consumption numbered 226, and from zymotic diseases, 382.

Pittsburg, 264,000: J. Guy McCandless, M.D., Registrar, reports: During the four weeks ending January 27th, 1894, there were 378 deaths, of which 155 were under five years of

age. Annual death-rate, 18.59 per 1000. Zymotic diseases caused 76 deaths, and consumption, 50.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of December, were: The grip, pneumonia, typhoid-fever, whooping-cough, consumption, malarial-fever, scarlet-fever, diphtheria, mumps, rheumatism, chicken-pox, tonsilitis, bronchitis, measles, and small-pox.

Chattanooga, 27,000 white and 13,000 colored: Total deaths, 67—41 of which were colored, and 38 under five years of age. Annual death-rates, 11.54 for the white population, and 37.83 for the colored, per 1000.

Memphis, 32,376 white and 25,575 colored: Total deaths, 123—59 of which were colored, and 27 under five years of age. Annual death-rates, 23.71 white, and 27.68 colored, per 1000.

Knoxville, 31,273 white and 9112 colored: Total deaths, 54—20 of which were colored, and 15 under five years of age. Annual death-rates, 13.04 white, and 26.33 colored, per 1000.

Nashville, 54,595 white, 33,159 colored: Total deaths, 152—82 of which were colored, and 38 under five years of age. Annual death-rates, 15.38 white, and 29.66 colored, per 1000.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—J. T. Reeve, M.D., Appleton.

Milwaukee, 260,000: U. O. B. Wingate, M.D., Commissioner.

During the month of January there were 371 deaths reported, 170 of which were under five years of age. The annual death-rate was 16.80 per 1000. Zymotic diseases caused 84 deaths, and consumption, 36.

U. O. B. Wingate, M.D., M.M.S.S., of Milwaukee, has been elected Secretary of the Wisconsin State Board of Health, to succeed J. T. Reeve, M.D., who retires June 1st next, after serving in that capacity since the Board was organized, nineteen years ago. Dr. Wingate's term of four years as Commissioner of Health of Milwaukee expires in April next; about two years ago he was appointed on the State Board of Health for a term of seven years by Governor Peck.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

THE REPORT ON ST. LAWRENCE QUARANTINE SERVICE FOR 1893, by F. Montizambert, M.D., Medical Superintendent, shows admirable efficiency. Of all the infected vessels handled, a few only are cited as illustrative examples, among which are the following:

"The steamship *Oregon*, Gibson, master, from Liverpool, May 19th, with 45 saloon, 76 intermediate, and 587 steerage passengers and 92 crew, arrived at quarantine on May 31st. This vessel had an outbreak of diphtheria and measles among the steerage passengers, and had had 5 deaths in the forty-eight hours previous to arrival. These diseases were so generally spread throughout the steerage as to have defied isolation. I therefore landed all the 587 steerage passengers. Other cases occurred among these passengers in quarantine from disease contracted before they left the vessel. The hospital records show the admission of 61 sick—18 cases of diphtheria and 43 cases of measles from this ship alone. Of these, 17 proved fatal.

"The *Oregon* was thoroughly disinfected here, and has since brought out four shiploads of passengers without any recurrence whatever of disease.

" Steamship *Monte Videan*, Calvert, master, from London, June 17th, with 10 cattlemen and a crew of 41, arrived at quarantine on June 29th. One of the crew had the small-pox. The vessel arrived late on Thursday evening. The sick man was landed and the crew vaccinated. During the next two days the vessel underwent the usual process of disinfection employed at the station. On Sunday, July 2d, the owners sent down a new crew to take the vessel on immediately the disinfection was concluded. Prior to their arrival the old crew were taken off and landed at the quarantine station to be kept under observation. The necessity for this was demonstrated by 6 of them developing during the first few days ashore the small-pox they had contracted on shipboard before the vessel arrived The new crew were from the steamship *Pomeranian*, then loading at Montreal. Part of them subsequently left Montreal on the *Pomeranian*, part on the *Monte Videan*. No case or symptom of small-pox subsequently occurred on either vessel.

" The admissions to the quarantine hospitals to date of report (October 31st) were 237 for this season.

" The deaths in hospital to date 25—9 from measles and its sequelæ, 8 from diphtheria, 6 from scarlet-fever, and 2 from cholera infantum."

BUENOS AYRES, 575,587 : Albert B. Martinez, Director-General of Municipal Statistics.

MORTALITY STATISTICS ABROAD FOR THREE MONTHS ENDING DECEMBER 31ST, 1893.

Population, total number of deaths, annual death-rate per 1000, and deaths from small-pox :

London, 4,305,551 ; 24,951 ; 23.1 ; 19. Glasgow, 677,883 ; 3763 ; 22.2 ; 2. Liverpool, 515,507 ; 3571 ; 27.7 ; 2. Manchester, 510,486 ; 3110 ; 24.4. Birmingham, 487,897 ; 2897 ; 23.8 ; 43. Leeds, 382,094 ; 1902 ; 19.9 ; 5. Dublin, 349,594 ; 2385 ; 27.3. Sheffield, 333,922 ; 1894 ; 22.7. Edinburgh, 265,672 ; 1487 ; 22.4 ; 2. Belfast, 265,123 ; 1779 ; 26.8. Bristol, 225,146 ; 1256 ; 22.3 ; 15. Bradford, 221,611 ; 1162 ; 21.0 ; 61. Nottingham, 220,551 ; 1163 ; 21.1 ; 1. Hull, 208,639 ; 1238 ; 23.7 ; 1. Selford, 203,427 ; 1255 ; 24.7.

Newcastle, 197,026; 1075; 21.8. Portsmouth, 167,284; 735; 17.6. Norwich, 104,176; 471; 18.1. Amsterdam, 406,302; 1910; 18.8. Rotterdam, 203,486; 1221; 24.0; 84. The Hague, 156,497; 839; 21.4; 2. Paris, 2,424,705; 11,484; 18.9; 112. Lyons, 438,077; 2030; 18.5. St. Étienne, 133,443; 662; 19.8; 1. Havre, 116,369; 796; 27.4; 1. Reims, 105,408; 526; 20.0. Nice, 97,720; 457; 18.7; 2. Nancy, 87,110; 418; 19.2. Besançon, 54,636; 272; 19.9; 12. Berlin, 1,714,938; 8253; 19.3. Hamburg, 581,608; 2996; 20.6. Leipzig, 388,479; 1839; 18.9. Munich, 380,000; 2607; 27.4. Breslau, 324,143; 2532; 31.2. Dresden, 304,519; 1521; 20.0. Magdeburg, 224,303; 1262; 22.5. Frankfort, 193,144; 842; 17.4. Königsberg, 167,099; 1150; 27.5. Dusseldorf, 159,858; 777; 19.4. Nuremberg, 156,902; 838; 21.4. Altona, 153,490; 758; 19.8. Chemnitz, 152,004; 1035; 27.0. Elberfeld, 134,745; 593; 10 2. Stuttgart, 134,517; 679; 20.2. Bremen, 131,-082; 650; 19.8. Strassburg, 129,450; 656; 20.3. Dantzig, 124,849; 969; 31.0. Stettin, 123,198; 812; 26.4. Barmen, 122,899; 573; 18.6. Crefeld, 113,198; 420; 14.8. Halle, 111,435; 601; 21.6. Aix-la-Chapelle, 107,472; 548; 20.4. Essen, 85,753; 452; 22.1. Brussels, 488,188; 2015; 16.5; 1. Berne, 47,620; 213; 17.9. Basle, 75,114; 405; 21.6. Geneva, 78,777; 402; 20.4. Lausanne, 35,623; 145; 16.3. Zurich, 103,271; 460; 17.8. Chaux-de-Fonds, 27,511; 112; 16.3. Vienna, 1,435,931; 8318; 23.2; 7. Buda-Pesth, 539,-516; 3420; 25.4. Prague, 322,910; 1863; 23.1; 5. Trieste, 158,549; 1138; 28.7; 52. Lemberg, 131,129; 974; 29.7. Gratz, 115,006; 735; 25.6. Brünn, 96,761; 782; 32.3; 3. Cracovie, 77,144; 793; 41.1; 76. Debreczin, 60,476; 385; 25.5. Presbourg, 57,190; 463; 32.4. Pilsen, 52,406; 288; 22.0. Linz, 48,868; 339; 27.7. Copenhagen, 334,000; 1463; 17.5. Stockholm, 249,246; 1162; 18.6. Gothemburg, 108,969; 451; 16.6. Christiania, 156,500; 711; 18.2. Moscow, 753,469; 5716; 30.3; 17. Warsaw, 500,931; 2943; 23.5; 154. Turin, 335,126; 1418; 16.9. Venice, 162,326; 734; 18.1; 1.

EDITOR'S TABLE.

SANITARIAN, MARCH NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

NATIONAL SANITATION.

OF the different bills that have been introduced in Congress during the present session and heretofore for the establish ment of a national health service, we have endeavored on other pages of this number to make such a compilation and substitute as would, in our judgment, effectually overcome the objections that have been urged against them.

Our effort has been to so compose and empower a national *board* of health as to utilize the knowledge of preventive medicine gained in the public service, both national and State, without disturbing the allegiance of such officers to their respective departments by transferring them from one department to another, because such transfers—of the chiefs of bureaus in particular—would not only be inconsistent with the proper discharge of their duties to their legitimate services, but would be quite certain to result in discord.

Moreover, while every sanitarian acquainted with the duties of the medical officers of the Army, Navy, and Marine Hospital Service knows that they comprise special attention to preventive medicine in their legitimate relations respectively, also knows that those relations, even in the aggregate, grasp but a very small portion of the comprehensiveness of a national bureau or board of health. Hence to claim and urge, as the committee of the New York Academy of Medicine have claimed and urged, that the medical officers of those circumscribed services are more competent to investigate local conditions, dense populations, water supplies, disposal of refuse, sewerage, offensive and noxious businesses, slaughter-houses, poor food, and many other subjects and conditions, in their relations to the public health, than many physicians in civil

practice who have given special attention to preventive medicine, implies a like shallow knowledge of the range of duties of such public officers and of the scope of a national health service.

But, as this writer has before taken occasion to assert, he yields to no one a higher respect for the medical officers of the Army, Navy, and Marine Hospital service, and what they have accomplished in the promotion of preventive medicine; yet from such practical knowledge as he has been able to acquire in the premises and much reflection upon the subject, he is thoroughly of the opinion that a national board of health wholly composed of members chosen as provided in the bill proposed on other pages, and an advisory council, to consist of the surgeon-generals of the Army, Navy, and Marine Hospital Service, and the executive officers of the State boards of health, would not only secure the benefit of the national and State services to the fullest extent, but would be a great improvement on the other bills now before Congress for the establishment of a harmonious and efficient service.

MIDWINTER'S INSPECTION OF SOUTHERN SANITARY RESORTS —EDITORIAL EXCURSION.

Although February 13th seemed not the most propitious for a starting-point for the sunny South, especially as the day had been marked by a blizzard, a storm said to be the most severe of ten winters, a larger number had braved the elemental strife than the undersigned, as representative of THE SANITARIAN, had expected the pleasure of meeting. In fact, the storm was such as to raise some doubt as to our getting away at the time announced for sailing.

We met on the staunch steamship *Roanoke*, which we afterward learned was the only coast steamship that on that day had the courage to brave the tempest.

I was already acquainted with the accomplished editor of the *New England Medical Monthly*, who, for this journey, was to be our "guide, philosopher, and friend." It was also my good fortune to have long known the learned editor of the *Medico-Legal Journal*. The other members of the party, in-

cluding several ladies, I had never before had the pleasure of meeting.

We had plain sailing until we reached Sandy Hook, and for so short a time the party seemed to have become pretty well acquainted. Once outside, the gallant ship was so tossed about that most of the party sought their staterooms.

The next morning was rainy, and we were debarred the privilege of witnessing one of the grandest sights in nature, "a sunrise at sea." We passed Fortress Monroe and entered Hampton Roads in the rain.

We were soon conducted to our train and on our way to the land famed for flowers and sunshine. Our first stop was at Henderson, N. C., on the morning of the 15th, where we found the shrubs and trees handsomely decorated, like a New England winter, by an ice storm. Here we were informed that this was the coldest day of the season. This is in the midst of the tobacco-growing region of the resourceful State of North Carolina.

At *the* hotel we were served with a breakfast seldom equalled and never excelled. In a wide hotel experience in Europe I know of no place across the Atlantic that has ever produced so good a morning repast.

Here we visited some of the tobacco warehouses, and saw the golden leaves sold at auction. They take a wide range in value, according to quality, the best bringing $1 a pound, and the lowest grade $1 for one hundred pounds. It is to be hoped that these people in the near future will discover some more profitable product—one which, instead of poisoning our youth and blighting our manhood, may help to build up and strengthen our race.

Here we also visited a colored school, established by the Methodists of Pennsylvania, which numbers nearly one thousand pupils. They seemed bright, cheerful, and happy, and entertained us with songs characteristic of their race.

After being driven over the place, we had an excellent dinner at the same hotel where breakfast was served, which had the disadvantage of coming too soon. Meals to be heartily enjoyed and to be the most nutritious must be needed—not too often.

After dinner we were soon on our way to Southern Pines.

After supper at one of the hotels of that place we returned to our train. The next morning at nine o'clock we had breakfast at the Ozone House. Here I met Dr. Nichols, from Shelter Island. He said, "It has been my practice to visit Florida in winter to avoid rheumatism, but from there I generally return with more or less malaria. Here I expect to become exempt from both."

After breakfast we visited the new hotel, which is to be ready next season. It is intended to accommodate one hundred and fifty persons. A smaller house with a community of cottages, I think, would have been much more select and more sanitary than so large a caravansary, which crowds so many together.

It is hard to judge a place correctly on so short a visit. In soil and climate nature seems to have made it an ideal place. The air is dry, balmy, balsamic, and ozonic. The soil should not be polluted with cesspools, sink drains, stables, pig styes, or hen roosts.

If the natural advantages of Southern Pines should ever be supplemented with the best local sanitary conditions, we could say to our patients who need all the resources of the best hygiene for recovery, here is one spot that supplies all the requisites.

There should be on this broad land, so highly favored by nature, at least one sanitary resort exempt from soil-pollution. There should be one spacious area which does not emit "a congregation of pestilential vapors that would infest the North Star." Could such a region be found, it only need be known to become the Mecca for invalids. It would be the spot of all others where they, if anywhere, could confidently look for a return to health.

Southern Pines is broad enough and land is cheap enough to place outside the residential section all soil and air-polluting material. I am informed that at Southern Pines there are one thousand acres roundabout in fruits and vineyards. Many of the graceful long-leaf pines have fallen a sacrifice to the turpentine traffic.

The new growth should be protected. Here are cheap lands, cheap lumber, and an abundance of pitch pine, which furnishes cheap fuel. It is an attractive place for healthful

homes when its natural advantages are carefully considered and carefully conserved.

We next visited Charlotte, which we found full of activity, energy, and enterprise. It has several cotton mills, extensive cotton-seed oil work, and manufactures of fertilizers. It is the residence of the widow of the late Stonewall Jackson. It would be difficult to find a city of its size, North or South, that shows more evidence of thrift than Charlotte. Our reception was most cordial and hospitable.

Athens, the classic city of Georgia, was our next stop. Here we were also heartily welcomed. From its general appearance we could only regard it as a specially attractive place for business or residence. We were so cordially received and so kindly entertained that, for myself, I was sorry to leave so soon ; and I hope in the near future to pay this modern Athens another and less hurried visit.

Atlanta came next ; and, as in all places, the greeting was cordial and characteristic of this Southern country. Atlanta has an elevation of eleven hundred feet above sea level, which gives this place sanitary advantages. It has special educational advantages, including medical schools. It seems to be a city of great energy and enterprise. Of all the cities we have visited thus far, this only seems to enjoy the distinction of possessing Turkish baths. From the external appearance of the baths I think they are too much under ground to be of much utility. I had a talk with two physicians, who propose to establish a sanitarium which shall supply all natural remedies.

We left Atlanta early, and reached Clinton, S. C., in season for dinner. We dined at what is known as the Dinner House, where we were favored with several dishes we had not before met with, one of which was a huge chicken pie. It seemed to be a decided hit by the readiness with which it was demolished. Here we visited the Thornwell Orphanage, which is a model institution kept in a model way. After our group was photographed our journey was resumed.

At Nevassa we were met by a reception committee, who came out to escort us to Wilmington. On our arrival there we were driven to the Orton House, where we were regaled with a delicious breakfast, one item of which was shad direct

from Cape Fear River. One good feature of this breakfast, which made it more enjoyable, was our special devotion to it. There was no speech-making.

After breakfast we rode to the steamer *Wilmington*, which gave us a delightful sail down the Cape Fear River. On our right we passed an extensive rice plantation, which was being ploughed and prepared to receive the seed, when it will be overflowed or submerged with water. Some of the ladies of Wilmington had prepared an elaborate luncheon, with which they kindly served us on the boat as we were returning.

This luncheon was followed by some speech-making and some singing. Upon landing we were speedily put on board a special train and conveyed to the "Hammocks." After a promenade on the ocean beach, in which we listened to "what the wild waves were saying," we repaired to a rather primitive oyster house, where we feasted on luscious bivalves fresh from their beds, but deliciously roasted.

This is a sample of *one* day's feasting. It is rather fortunate that our return was not further delayed, or many of our party would have been compelled to enter dry dock for repairs. Hospitality is a Christian virtue, and should take cognizance of the fact that all men are not provided with Falstaffian stomachs. With hearty thanks for the generous hospitality of the city of Wilmington, we bid her farewell for a season.

From Wilmington we went direct to Raleigh, where we arrived early in the evening. On our way we halted for a moment at Southern Pines, where our train was boarded by the committee from Raleigh who were sent as our escort. Carriages were waiting to take us to the Yarborough Hotel, where we were hospitably entertained.

Here we were welcomed by a goodly company of prominent citizens—ladies and gentlemen. After an hour or two, which sped rapidly in the presence of such agreeable company, we were conducted to the dining-room, where a most delicious and elaborate banquet was skilfully served. It was the perfection of a feast. The colored waiter at his best is unrivalled and unapproached.

This occasion will be long remembered as the concluding one of a series of entertainments characteristic of Southern

hospitality. After this occasion we had no disposition to impair its recollection by another visit to anywhere. We were invited to Augusta, Macon, and New Bern, to all and each of which places I have no doubt we would have been kindly received and right royally entertained. But we had to fix some limit to capacity and time.

In a succession of such hurried visits to so many cities it is hard to recall all the advantages that pertain to each place, and they are rather liable to become mixed up. Every one of the places we have visited had attractions and entertainments that would need a month's time to fully comprehend and describe.

As one of the guests of the Old Dominion Steamship Company and the Sea Board Air Line I am more than grateful for the opportunity to visit these several Southern cities, and to have met the business and professional men who have established their success.

I have been favorably impressed with the ability, the fraternal greeting, the courtly and kindly urbanity of the physicians in whose hands rest the health and life of the citizens. They are eminently fitted to inspire confidence and hope in those who entrust themselves to their care.

Preventive medicine calls loudly for natural remedies. Are not these remedies too much ignored, too little understood in these Southern cities? It would be impossible to find as may cities in the North or West that are so deficient in appliances for the employment of natural remedies.

Sanitariums are indispensable requisites to the best results; and I greatly fear that their chief obstacle is the blind belief of some of our Southern brothers in the superior efficacy of drugs.

From wide observation at home and abroad, it is my impression that it would be difficult to find among any other people, otherwise so highly cultured, communities of equal size of those we have visited so deficient in sanitary appliances necessary to the maintenance of health resorts.

The ladies who accompanied us in our journey, which was estimated as covering twenty-five hundred miles, who made the entire circuit, including long drives and extended walks, at the finish were as much superior in average vigor as they

appeared to be below at the start. Several factors had contributed to this result.

First, mental diversion and freedom from care. Second, atmospheric advantages—balsamic and ozonic. Third, machine massage and velocity vibration supplied by the Seaboard Air Line, which, like a gentle lullaby, contributed to refreshing sleep, and the invigoration of all vital processes, until, like Macbeth, all could say, "Now, good digestion, wait on appetite, and health on both."

There are not a few women who suffer at home for want of exercise that would be greatly benefited by such an excursion as we have just enjoyed; and I can commend them most cordially to the careful and discreet vigilance of the Old Dominion Steamship Co. and the Seaboard Air Line as one has who has proved it. E. C. ANGELL.

SANITARY TOPOGRAPHY AND MINERAL SPRINGS OF THE UNITED STATES.—In reply to numerous inquiries, will be resumed in April number—West Virginia.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

A TREATISE ON HYGIENE AND PUBLIC HEALTH. Edited by THOMAS STEVENSON, M.D., F.R.C.P., London, Lecturer on Chemistry and Medical Jurisprudence at Guy's Hospital; Official Analyst to the Home Office; and SHIRLEY F. MURPHY, President of the Incorporated Society of Medical Officers of Health; Medical Officer of Health of the Administrative County of London. In three volumes. Vol. II. 8vo, pp. 850. Illustrated. Price, $7.50. Philadelphia: P. Blakiston, Son & Co.

This is in thorough keeping with the first volume of the same work, of which we expressed our high appreciation a

little more than a year ago (Vol. XXIX., p. 466). This is still more interesting because the subjects treated of are more important: "The Pathology and Etiology of Infectious Diseases," by E. Klein; "Natural History of Infectious Diseases," by T. W. Thompson; "Small-pox and Vaccination," by John C. McVail; "Vital Statistics," by Arthur Ransom; "Marine Hygiene," by Henry E. Armstrong; "Military Hygiene," by J. Lane Notter; "Disposal of the Dead," by Sir T. Spencer Wells and F. W. Lowndes; "Medical Officer of Health," by Alfred Ashby. Considering the celebrity of these authors, it seems almost unnecessary to say that every one of the essays is exhaustive, but wholly devoid of redundancy.

Klein's essay on "The Pathology and Etiology of Infectious Diseases" takes up two hundred and forty pages, rehearsing not only his own researches, but thoroughly analyzing the researches of other bacteriologists on the most important subject that has engaged the attention of the medical profession and of sanitarians during the present century. It opens with a brief allusion to the time, less than fifty years ago, when the profession was all "at sea" on the subject, and was engaged in the discussion of the question whether such diseases were of spontaneous origin or not, until it was submerged by the researches of modern investigators, notably Buchanan, Ballard, and Thorn, and notable contemporary bacteriologists, Pasteur and others who followed, of whom all sanitarians know Klein himself has long been among the foremost. He gives the gist of the most recent knowledge of bacteria in all their phases, and their relations to specific diseases; how to cultivate them; the conditions of their existence; forty-two plates of micro-photograms of different species, cultures, etc. Special chapters follow on the manner of infection or contagion, disinfection, specific or pathogenic bacteria, septicæmia, anthrax, epidemic pneumonia—influenza, gonorrhœa, acute exanthemata, diphtheria, fevers, Asiatic cholera—dysentery, infantile diarrhœa or summer diarrhœa, intermittent or malarial fever—ague, tetanus, rabies and hydrophobia, glanders and farcy syphilis—rhinoscleroma, tuberculosis, leprosy actinomycosis—trachoma, diseases due to flagellate protozoa, diseases associated with coccidia, blastomycetes or torula,

moulds or mycellial fungi. "The Natural History of Infectious Diseases," by Dr. Thompson, appropriately follows, with similar particularity in the order in which they are given by the Registrar-General: Measles, rotheln, scarlet-fever, typhus, relapsing-fever, influenza, whooping-cough, mumps, diphtheria, cerebro-spinal-fever, simple continued-fever, enteric-fever, cholera, diarrhœa, malarial disease, erysipelas, puerperal-fever, tuberculosis, croup, pneumonia, yellow-fever. These two are fair examples of the detail of all the essays which contribute to the thoroughness of this magnificent treatise, which no health officer who would be abreast with sanitary progress can afford to be without.

A TEXT-BOOK OF PHYSIOLOGICAL CHEMISTRY. By OLOF HAMMARSTEN, Professor of Medical and Physiological Chemistry in the University of Upsala. Authorized translation from the second Swedish edition by JOHN A. MANDEL, Assistant to the Chair of Chemistry, etc., in the Bellevue Hospital Medical College and in the College of the City of New York. 8vo, pp. 520. Spectrum plate. New York: John Wiley & Sons.

A physiological work particularly well suited to the needs of the sanitarian; for, while making no pretence to a complete or detail text-book for medical students, it comprises in particular the results of physiologico-chemical research and the principal features of physiologico-chemical methods of work, admirably well suited to the laboratory.

The subject matter is arranged under fifteen chapters. First, introductory, on the conservation of forces and matter of living beings, and their function to appropriate, assimilate, and transform—not to create—already existing material into new forms, and the conditions under which this transformation is promoted and effected. Protein substances come next, classified under subheads: Albuminous bodies, proteids and albuminoids. The animal cell, the blood, chyle-lymph-transudations and exudations; the liver, digestion, tissues of the connective substance, muscle, brain and nerves; organs of generation, milk, the skin and its secretions, the urine and the exchange of material follow in the order enumerated. The last considers the various foods and the demand for food in

man, and concludes with a table of foods, animal and vegetable, showing the proportions in 1000 parts, of fats, carbohydrates, ash, water and waste. Tables are also given of the potential energy and the relative nutritive value of foods, the needs of man under various conditions, rations of soldiers, sailors, and others, and a sketch of diet cures; bantingism, etc.

THE PHYSICIAN'S WIFE; AND THE THINGS THAT PERTAIN TO HER LIFE. By ELLEN M. FIREBAUGH. With portrait of author and 44 photo-engravings of original sketches. 8vo, pp. 200. Price, cloth, $1.25 net; special limited edition, first 500 copies, numbered, and printed in photogravure ink on extra-fine enamelled paper, bound in half-leather and vellum cloth, $3 net. Philadelphia: the F. A. Davis Co., publishers, 1914 and 1916 Cherry Street.

A very entertaining book not only for physicians' wives and physicians themselves—for whom it gives many lessons of practical utility—but for patients also who would acquire a just appreciation of the abiding emotions, wear and tear of the physician's life-work, while yet enlivened and encouraged by compensating advantages, and, most of all, by wives who are in sympathy with both his work and his patients; particularly with that large proportion of his clientele—the poor—who make their strongest appeals through the wife, and are ever diligent in the cultivation of unselfish interests. Indeed, there is no room for selfishness in any good doctor's heart, because if he is faithful to his avocation his thoughts are so much more occupied by his concern for others than for himself that he has little or no time to waste on selfish considerations. Hence no man more than he needs the companionship of a good wife—one who enters with her whole soul into the spirit of his work; who can *answer* for him; who can reason, reflect, feel, discourse, and discriminate, and by such means assist him by strengthening his principles, lightening his sorrows, and purifying his joys. Such a wife evidently wrote this book. It is sufficiently tinctured with wit to make its wisdom both palatable and wholesome. Every physician's wife at least should read it; and the more it is read by other people the better for their health and comfort.

SEWAGE DISPOSAL IN THE UNITED STATES. By GEORGE

W. RAFTER, M. Am. Soc. C. E., and M. N. BAKER, Ph.B., Associate Editor *Engineering News*. 8vo, pp. 625. Illustrated. Price, $6. New York: D. Van Nostrand Company; London: Sampson Low, Marston & Co.

This work is the outcome of the advances made during recent years in the United States and abroad against river pollution, and for the proper disposal of sewage; insomuch that the older works of Baldwin Latham, J. Bailey Denton, and others of a former period, as engineering text-books, have been so nearly superseded by *sanitary* engineering in effect, as well as in name, as to render such a work as the one before us necessary to every engineer in the health service. "The chief object of the work," as stated prefatorily, "is to specially call the attention of sanitary authorities, engineers, and others interested in questions of public sanitation to the fact that we have already accumulated a considerable stock of experience in sewage disposal in this country, and that for the future Americans who wish to study the subject in detail will not be obliged, as until recently was the case, to go abroad for the purpose."

To this end "abroad" is evidently used with a double signification, meaning, besides the engineering works of foreign countries, works on collateral knowledge; for the first chapter, on "Preliminary Discussion," and the second, on "The Infectious Diseases of Animals," essay to comprise the conception of such knowledge of the communicable diseases as afflict mankind and animals as would leave the superficial reader to infer that such knowledge has been the outcome of the engineering profession, instead of a wholly different order of scientists, who have made it the basis and the spur to all sanitary engineering.

The work is divided into two parts, "The Discussion of Principles" and "The Description of Works." The first part begins with the preliminary chapters just above referred to, including a classification of the systems of sewage disposal under the following heads:

1. The use of privies and cesspools.
2. Collection by pail systems.
3. Pneumatic systems of Liernur, Berlier, Shone, and others.

4. Simple subsidence or sedimentation.

5. Simple filtration through some artificial substance, as coke, excelsior, or ashes.

6. Discharge of crude sewage into tidal or other large bodies of water.

7. Chemical precipitation.

8. Broad irrigation.

9. Intermittent filtration.

10. And finally electrolysis; although this method, while promising good results, must still be considered in the experimental state.

Excepting a short chapter descriptive of the pail system at Hemlock Lake, N. Y., the first three methods named are omitted from consideration. All the rest are described seriatim and with such lucidity as to be easily understood by any intelligent reader. Nitrification and the nitrifying organism are the subject of a chapter which sums up the results of the most authentic investigations of the subject, indicating that the process of nitrification takes place in two stages, each characterized by a distinct organism; the function of one being the conversion of ammonia into nitrite, and of the other to convert the nitrite into nitrate. Both organisms are present in ordinary soils in enormous quantity, and also commonly present or quickly develop in sewage, which may be considered a nutrient medium for them, because it contains a large amount of their natural food—nitrogenous material.

The pollution of streams is succinctly treated from its unsanitary aspect as first contended against in this country by the Massachusetts State Board of Health more than twenty years ago. This subject is reviewed in its progress under legislative enactments in the United States, and particularly of Massachusetts, where it has been the most effectually dealt with, and whence has come the greatest encouragement for its extended prosecution.

The general data of sewage disposal—by engineering means—are given in detail with numerous examples; and the Descriptions of Works (Part II.) is elaborately illustrated with diagrams and charts.

Appended are the English River Pollution Prevention Act enactments by the legislatures of New York, Massachusetts,

New Jersey, Virginia, and Minnesota, for the protection of the water supplies; and rules for the sanitary protection of watersheds.

Altogether it is the most comprehensive and the best work on sewage disposal hitherto published in the United States, eminently useful to hydraulic engineers not only, but to all State boards of health.

THE MODERN CLIMATIC TREATMENT OF INVALIDS WITH PULMONARY CONSUMPTION IN SOUTHERN CALIFORNIA. By P. C. REMONDINO, M.D., Member American Medical Association, American Public Health Association, etc. The Physicians' Leisure Library Series. Price, 25 cents; $2.50 a year. Detroit: George S. Davis.

This book is a concise abstract of much that Dr. Remondino has written on the advantages of the climate of Southern California, likening it to and rightly claiming for it in some respects superior advantages to the Mediterraneous shores of Italy and France, not only for pulmonary diseases, but for rheumatism, disease of the kidneys, and for the prolongation of life generally. The author is thoroughly in love with the subject, and cleverly exalts its attractions in all its aspects; but he is careful to advise all who would seek the advantages—especially if only as a dernier resort—not to expect that it can wholly supplant competent professional direction, if they would avoid the rocks and shoals to which feeble craft are subject in all waters. A climate chart and a tabulated record of meteorological observations at San Diego, Los Angeles, Coronado Beach, San Bernardino, and Santa Barbara, as compared with the records of New York, Chicago, Denver, and other places, add value to the book as a record that may be consulted with benefit by all who would learn the difference.

CLIMATES OF THE UNITED STATES IN COLORS. Popular Edition of Denison's Charts, with Additions. By CHARLES DENISON, A.M., M.D., Professor of Diseases of the Chest and Climatology, Medical College, University of Denver; ex-President American Climatological Association, etc. Price, $1. Chicago: the W. T. Keener Company.

Beyond question the most lucid and the most useful series of object lessons on the climate of the United States ever

hitherto published, illustrating regional elevations; showing the annual cloudiness, rainfall, temperature, and winds; combined atmospheric humidities and seasonal isotherms, and tabulated observations of the Weather Service Bureau covering a period of nearly eleven years.

WHERE TO SEND PATIENTS FOR WATER CURE AND CLIMATE TREATMENT is the subject of a pamphlet of forty pages by THOMAS LINN, Doctor of Medicine, Faculty of Paris, etc., an author of excellent repute on such subjects, published by Henry Kimpton, 82 High Holborn, London, W. C.

While describing everything that nature and medical art can give at the mineral springs and other European health resorts at all seasons, their chief and, we believe, their only superiority over American resorts and treatment is that of being better organized, and that they commonly have competent physicians in relation with them.

ANTISEPTIC THERAPEUTICS. Two volumes. By DR. E. L. TROURSSART, Paris, France. Translated by E. P. HURD, M.D. Physicians' Leisure Library Series. Price, 25 cents a volume. Detroit: George S. Davis.

A particularly useful condensation of an immense amount of practical knowledge to all physicians. It comprises a sketch of the microbian theory and a description of microbian diseases; antiseptic medicine in general, an enumeration of antiseptic remedies, their doses, when and how to use them; toxic, therapeutic, and antiseptic equivalents; antiseptic treatment of diseases which belong to internal pathology—of the digestive apparatus, of the circulatory system, of the genital apparatus, infectious diseases, etc., and of particular organs; antiseptic treatment by baths, sprays, injections, etc.; antiseptic hygiene of patients and their environment.

A PRACTICAL TREATISE ON THE DISEASES OF THE HAIR AND SCALP. By GEORGE THOMAS JACKSON, M.D., Professor of Dermatology, Woman's Medical College, New York Infirmary; Chief of Clinic and Instructor in Dermatology, College of Physicians and Surgeons, etc. New revised and

enlarged edition. Illustrated. Pp. 424. Price, $2.75. New York: E. B. Treat.

This enlarged and improved edition of a work we have before had occasion to commend should not fail to find a place in every physician's library. It is the only thorough treatise on the diseases of the hair and scalp we know of, containing knowledge of practical utility to every medical practitioner.

A TREATISE ON HEADACHE AND NEURALGIA, including Spinal Irritation and a Disquisition on Normal and Morbid Sleep. By J. LEONARD CORNING, M.A., M.D., Consultant in Nervous Diseases to St. Francis Hospital; Fellow of New York Academy of Medicine, etc., with an appendix on EYE STRAIN A CAUSE OF HEADACHE. By DAVID WEBSTER, M.D., Professor of Ophthalmology in the New York Polyclinic; Surgeon to Manhattan Eye and Ear Hospital, etc. Third Edition. Pp. 275. Price, $2.75. New York: E. B. Treat.

The commonness and obstinacy of the diseases which form the subject of this treatise are alone sufficient to attract the attention of physicians to any book treating of them. But when, as in this case, the authors are so well known to be specialists who have enjoyed extraordinary opportunities and success in the treatment of nervous affections and eye diseases, respectively, as Drs. Corning and Webster, this new and enlarged edition of a work already favorably known to the profession ought, as it doubtless will, find a place in the library of every physician who is not already possessed of it.

REPORTS OF THE BUREAU OF LABOR STATISTICS OF THE STATE OF NEW YORK FOR 1891 AND 1892. Two volumes for each year; Charles F. Peck, Commissioner.

These reports are replete with statistical information of value for the period, but they have in some measure lost their pertinence for review by their late appearance.

1891: Part I. reports on Rates and Wages; Part II., Strikes and Boycotts.

1892: Part I. reviews the Economic Development of the State for Ten Years; Part II., Strikes and Boycotts.

But *Sanitary Regulations* are referred to in such terms

(Part I., 1892) as to leave the inference that they are still deficient.

The plumbing laws of 1884 provide for the registration of plumbers, etc. "But their effect can hardly be noticed in any improvement of sanitary conditions in factories and workshops. . . . Important regulations, both sanitary and moral, were provided by the amended Factory act of 1887, in requiring that water-closets be properly ventilated and at all times kept in a clean condition; also that the water closets used by females be separate from those used by males, and properly screened. This was supplemented, in 1890, by provision for female dressing-rooms, when required by the inspector; and) in 1892, by a clause against obscene writing and marking. The Factory Inspector reported in his fifth annual report (1891, that the law did not enable him to cope with the evil conditions still then prevailing, except to a limited extent. 'The means of ventilating closets,' he observes, 'are very poor in thousands of factories in this State. Even in New York, where there has been a rigid inspection of buildings for years, there is still cause for much complaint. In other places where there has never been any legal regulation of sanitary matters worth mentioning, it can be easily imagined that the state of affairs is worse. We have often found the closets insufficient in number, defective in construction, lacking in flushing facilities, and, to crown all, located in the same room where the operatives must breathe the contaminating air at least ten hours a day.'"

Child Labor is also made the subject of a subsection, by which it appears the State of New York is considerably in advance of most of the other States in the exercise of prohibitory measures.

"Among the measures recommended by the Factory Inspector in his sixth annual report was the prohibition of the employment of children under sixteen years of age in dangerous and unhealthy occupations. This suggestion was adopted by the Legislature in the much-improved Factory law of 1892, which contains two provisions bearing upon this point. One forbids the employment of any child under sixteen in any work-room or manufacturing establishments where its life or limb is likely to be endangered, or its health to be injured, or

its morals to be depraved by such employment. The other forbids the placing of any elevator in the care, custody, or management of a child under fifteen, and furthermore forbids any youth under eighteen to have charge of or to operate an elevator running at a speed of over two hundred feet a minute.

"All these regulations have not only rendered the prohibition of the employment of children under the age of fourteen more effective, but also discourage the employment of children under sixteen. According to a tabular statement in the sixth annual report of the Factory Inspector, the proportion of such children to the total number of persons employed in the manufacturing establishments inspected by his office had fallen from 8.2 per cent in 1887, to 4.1 per cent in 1891.

"As to that part of child labor legislation which relates to the age limit of employment in manufacturing industry, all the other States but one are behind New York. The creditable exception is Colorado, where the employment of children under fourteen is prohibited; but there, as here, the prohibition does not extend to mercantile establishments.

"In Massachusetts and Connecticut the age limit is thirteen years, but in both States it applies to mercantile as well as to manufacturing establishments.

"It is twelve years in Ohio, Wisconsin, Maine, Michigan, Kansas, Indiana, and Pennsylvania. In all these States the restriction applies to factory labor, and in Pennsylvania alone it extends to mercantile houses. An age limit of twelve years in Tennessee and of fourteen years in Indiana is placed on child labor in mines.

"In New Jersey the limit is twelve years for boys and fourteen years for girls, and the prohibition applies to manufacturing establishments only.

"In New Hampshire and Vermont children under ten years of age cannot be employed in factories.

"In Rhode Island there is no absolute prohibition as to age or class of work. The employment of children under ten years of age is forbidden only while the public schools are opened.

"In foreign countries only two have gone as far as the State of New York in limiting the age at which the child can be harnessed to the machine. These are Switzerland and

Austria, in both of which an age limit of fourteen years is strictly enforced in all manufacturing establishments. Moreover, in Austria the employment of children under twelve years in any gainful occupation whatsoever is prohibited.

"An age limit of twelve years is in force in France, Germany, Holland, and Sweden. In France and Germany the restriction applies only to manufacturing establishments. In Holland it applies to all occupations except personal and domestic service and agricultural labor. In Sweden stores, factories, workshops, and all other business establishments are included.

"In Denmark, Spain, and Russia child labor under ten years of age is prohibited in factories and workshops. The Russian law forbids also the employment of children between ten and twelve years of age in all but a few specified industries, and of children between twelve and fifteen in grist-mills, bleaching, dyeing and print works, bone-grinding establishments, bakeries and other specified industries."

NOTES AND NOTICES.

TUBERCULIN ABANDONED.—At a recent meeting of a German medical society, in discussing a paper in which the writer advocated the use of tuberculin in cases of consumption, Ewald stated that both experimentally and clinically tuberculin had been proved to possess no specific action, and that its use had been discarded on account of the dangers associated with it. He referred, for proof of his statement, to Pfuhl's experiments.

CHOLERA DOCTORS IN RUSSIA.—In the Russian province of Wiatka, a resolution was recently adopted at a general meeting of the citizens for insuring the lives of medical and surgical practitioners against cholera. From the funds of the province on deposit in the imperial bank, the family of a physician practising within the province will receive upon his death by cholera the interest on 5000 roubles, or on 8000 if he has practised within the province ten years. A surgeon's family will receive the interest on 1000 roubles, and in specified cases on 1600.—*Austrian Review.*

THE PROTECTIVE INFLUENCE OF VACCINATION.—The report of the medical superintendent of the hospital ships of England is strongly corroborative of previously recorded experience as to the protective influence of vaccination in safeguarding nurses and members of the staff of small-pox hospitals against an attack, and more especially a fatal attack, of that disease. Of 1201 persons employed on the staff of the hospital ships during the years 1884-92, only six, or ½ per cent, contracted small-pox, and all of those attacked recovered.

FACTS ABOUT DISEASE GERMS.—*Harper's Weekly* observes that among the well-known diseases whose bacterial origin is already placed beyond reasonable doubt are erysipelas, tuberculosis, diphtheria, tetanus, typhoid-fever, croupous pneumonia, and influenza. The facts discovered regarding some of these during the past fifteen years are among the strangest of the "true fairy tales" of modern science. For example, the micrococcus of croupous pneumonia, as discovered by Dr. Sternberg, lurks in the mouth, and is harmless there, awaiting, as it were, an opportunity when a condition of lowered vitality of the system—as from exposure to cold—shall enable it to take up its active abode in the lungs, and begin a development whose results will be manifest in an inflammation of those organs. Again, it appears that the bacillus of tetanus, or lockjaw, is abundant everywhere in the soil, and may rest on the surface of the human body or be taken into the stomach without producing injury. Even on the surface of an open wound it cannot develop, it being one of the bacteria that cannot grow in the presence of free oxygen. But if introduced into a deeper wound away from the air it may develop rapidly, and produce the painful and often fatal disease tetanus. Thus is explained the fact, always before a mystery, that even slight and seemingly insignificant puncture wounds are more likely to produce this disease than are open lesions that otherwise are far more serious.

PROTECTION OF WATER SUPPLIES IN PENNSYLVANIA.—A conference of county and other local boards of health of the State of Pennsylvania was held at Harrisburg during the week ending January 29th, 1894. The preservation of the water

supplies of communities from pollution was discussed, and a resolution adopted pledging all boards of health in the commonwealth to do all in their power to prevent contamination of the inland waters of the State. In a paper read by the Health Officer of Philadelphia, the work done by the Woman's Health Protective Association in stimulating sanitary reforms, such as keeping streets clean, removing nuisances, and improved household hygiene was referred to in the highest terms of approbation. The communications read were generally of a very practical and useful character. It was decided to form a permanent organization, which is to hold annual meetings at Harrisburg. The name adopted is "The State Association of Health Authorities of Pennsylvania." All persons officially connected with boards of health of this commonwealth shall be members, and honorary members may be elected from those who have rendered distinguished services to sanitation. Committees on Legislation and on Publication were provided for, besides an Executive Committee. The following officers were elected for the ensuing year: President, Hon. Robert E. Pattison (the Governor of Pennsylvania); Vice-President, Major Moses Veale, Philadelphia; Hon. Thomas P. Merritt, Reading; J. H. McClelland, M.D., Pittsburgh; Secretary, William B. Atkinson, M.D., Philadelphia; Treasurer, Jesse C. Green, M.D., West Chester. At the first session, Dr. Walter Wyman, Supervising Surgeon-General United States Marine Hospital Service, and Dr. J. H. Rauch, of the Illinois State Board of Health, were elected honorary members of the Association. This recent development in public health work is principally due to the zeal of Dr. Benjamin Lee, the Secretary of the State Board of Health.

THE HUMBUG OF PALMISTRY.—The Rev. J. M. Buckley, D.D. (February, 1894, *Century*), says that, after many experiments with those considered most successful, and a study of the subject in the light of anatomy, physiology, and natural coincidences, he regards palmistry as without basis in science or sense.

That no two hands have ever been absolutely similar is indisputable. When critically examined, no two leaves or flowers, though of the same species, appear exactly alike; much

less would such complex organizations as human hands be found without difference.

The sole and sufficient cause of different lines in different persons is the difference in the shape and size of the hands, elasticity of skin, strength and use of the muscles, and external pressure. Therefore hands of different persons are not alike, nor both hands of the same person. Mr. Francis Galton's remarks in his work "Finger Prints" are to the point:

> The palms of the hands and the soles of the feet are covered with two totally distinct classes of marks. The most conspicuous are the creases or folds of the skin, which interest the followers of palmistry, but which are no more significant to others than the creases in old clothes; they show the lines of most frequent flexure, and nothing more. . . .

GOOD POINTS IN THE SOUTH CAROLINA DISPENSARY LAW.—The claims of the dispensary to support, and its superiority over any form of licensing, rest on the following grounds: 1. The element of personal profit is destroyed, thereby removing the incentive to increase the sales. 2. A pure article is guaranteed, as it is subject to chemical analysis. 3. The consumer obtains honest measure of standard strength. 4. Treating is stopped, as the bottles are not opened on the premises. 5. It is sold only in the daytime; this under a regulation of the Board and not under the law. 6. The concomitants of ice, sugar, lemons, etc., being removed, there is not the same inclination to drink remaining; and the closing of the saloons, especially at night, and the prohibition of its sale by the drink, destroy the enticements and seductions which have caused so many men and boys to be led astray and enter on the downward course. 7. It is sold only for cash, and there is no longer "chalking up" for daily drinks against pay-day. The workingman buys his bottle of whiskey Saturday night and carries the rest of his wages home. 8. Gambling dens, pool-rooms, and lewd houses, which have hitherto been run almost invariably in connection with the saloons, which were thus a stimulus to vice, separated from the sale of liquor, have had their patronage reduced to a minimum, and there must necessarily follow a decrease of crime. 9. The local whiskey rings, which have been the curse of every

municipality in the State, and have always controlled municipal elections, have been torn up root and branch, and the influence of the barkeeper as a political manipulator is absolutely destroyed. The police, removed from the control of these debauching elements, will enforce the law against evil-doing with more vigor, and a higher tone and greater purity in all governmental affairs must result.—From "The South Carolina Liquor Law," by the Governor of South Carolina, in *North American Review for February.*

ONTARIO FOR PROHIBITION.—The Province of Ontario has by popular vote given a large majority in favor of the prohibition of the liquor traffic. This action by our high-spirited and splendidly administered Canadian neighbor comes at a time when temperance reformers in the United States look to prohibition as the ultimate solution of the drink evil with far less uniformity of agreement than ten or fifteen years ago. Will Ontario with her large towns manage to enforce prohibition to her own satisfaction and real benefit? Her experiences henceforth will be watched with the world's keen interest. It is noteworthy that the city of Toronto itself voted strongly for the change, and that the result in Ontario is by no means a triumphing of rural over urban majorities.—From "The Progress of the World," in the *February Review of Reviews.*

CANDIDATES FOR THE GRADE OF ASSISTANT SURGEONS U. S. MARINE HOSPITAL SERVICE.—A board of medical officers will meet Monday, April 16th, 1894, in Washington, D. C., for the purpose of examining candidates for appointment to the grade of Assistant Surgeon in the Marine Hospital Service.

For further information address,

"THE SUPERVISING SURGEON-GENERAL,
U. S. MARINE HOSPITAL SERVICE,
"Washington, D. C."

PRELIMINARY PROGRAMME OF THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.—At the Congress of American Physicians and Surgeons, to be held in Washington, May

29th, 30th, 31st, and June 1st, the following subjects have been selected for discussion: By the Association of American Anatomists, "Morphology as a Factor in the Study of Disease;" by the American Climatological Association, "Sewer Gas;" by the American Dermatological Association, "The Distribution and Control of Leprosy in the United States;" by the American Association of Genito-Urinary Surgeons, "Nephritis in its Surgical Aspects;" by the American Gynæcological Society, "The Conservative Surgery of the Female Pelvic Organs;" by the American Laryngological Association, "The Surgery of the Accessory Sinuses of the Nose;" by the American Neurological Association, "The Influence of Infectious Processes on the Nervous System."

THE INTERNATIONAL MEDICAL CONGRESS, MARCH 29TH–APRIL 5TH.—The Minister of the Treasury of Italy has awarded the sum of 30,000 lire ($6000) from the reserve fund of the treasury, toward the expenses of the Eleventh International Medical Congress of Rome. This is given as a temporary instalment pending the meeting of Parliament, when a special bill for an adequate contribution from the State will be presented by the ministry.

THE INTERNATIONAL SANITARY CONFERENCE AT PARIS.—The International Sanitary Conference which was to have met in Paris during the last week in January for the consideration of measures to control the cholera in the Red Sea and Persian Gulf in connection with the pilgrimages to Mecca, was postponed by the French Government owing to incomplete arrangements made by other countries, especially Turkey, which appointed no delegates. The postponed meeting was opened on February 7th, and the members were received by President Carnot, who welcomed them to the warmest hospitality in the name of the Republic.

THE ORIGIN OF RIGHT-HANDEDNESS will be treated in the *Popular Science Monthly* for March, by Professor J. Mark Baldwin, who gives the results of a series of experiments upon his infant daughter relating to the spontaneous use of the hands.

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OBSERVATIONS ON THE DIAGNOSIS OF DIPHTHERIA, AND REMARKS RELATIVE TO STATE SANITATION.*

By A. WALTER SUITER, A.M., M.D., Ex-President of the Medical Society of the State of New York, Fellow of the New York Academy of Medicine, etc.

THE subject of my observations may seem to some to be in the nature of "threshing old straw," but I make bold to assert that our mission in this regard is not yet accomplished; and, moreover, I contend that the time is now at hand when proper advantage should be taken of the facts which scientific investigation has thus far satisfactorily demonstrated, both for the sake of the individual and in the interest of public protection.

I have been much impressed by the following observation in a very able article recently published (Park, *Medical Record*, Vol. XLIII., No. 6): "Though there are many interesting points in the subject of pseudo-membranous inflammations still needing further study, it is nevertheless true that the knowledge already obtained is far in advance of its practical application."

This applies with equal force to most if not all of the dangerous communicable diseases, and the statement conveys so much impressive thought as to fully warrant its quotation here. Indeed, the suggestions which I "read between the lines" furnish for me the motive which has prompted many of the expressions which I submit.

The evolution of the present methods of bacteriological

* Read at the meeting of the Medical Society of the State of New York, February 6th, 1894.

diagnosis of diphtheria—and it is to that branch of the subject to which I desire to call particular attention—is interesting, and may be traced in few words.

Prior to 1868, when Professor Oertel published his classical treatise in Ziemssen's Cyclopædia, the clinical manifestations and macroscopical appearance of the exudate were wholly relied upon for diagnosis. He reported the discovery of micrococci in the membranous deposit, also in the blood and lymphatic system, describing their appearance as "point-like, dark contoured, round or oval little bodies, isolated and in zoöglœa." Thus began the application of the science of bacteriology to the study of the differential diagnosis of the disease. The subsequent researches of others, however, have shown that the micrococci spoken of by Oertel are none other than those which belong to all putrefying animal substances, and especially those which are commonly observed in the various pseudo-diphtherias of the present established classification—viz., the streptococcus and staphylococcus pyogenes. In 1883 Klebs discovered the bacillus which now in part bears his name, and which was shortly afterward (1884) isolated, cultivated, and successfully inoculated by Löffler; and the rod-shaped microbe, with rounded or club-shaped ends, came to be known and universally recognized as the distinctive *bacillus diphtheriæ* or *Klebs-Löffler bacillus*, by the most competent observers in Europe and our own country, notable among whom are Von Hoffman, Roux and Yersin, Martin, Baginsky, Brieger and Fränkel, Klein, Sternberg, Welch and Abbott, Park, Koplik, Prudden, and others. Some doubt was thrown upon the subject for a time by the last-named observer, who, in 1888, reported that he had failed to discover the bacillus in twenty-four cases examined critically by him with that object in view. But in the light of the present understanding it is beyond doubt, and, in fact, now admitted by Prudden himself, that the cases reported upon were not true diphtheria, and his observations have since become more famous than ever as, alternatively, they contributed largely to the establishment of the classification now almost uniformly recognized by pathologists, although his purpose then was to show the non-identity of the Klebs Löffler germ. Thus he "builded better than he knew."

It seems at this time quite probable that the following facts regarding the Klebs-Löffler bacillus, as expressed by Sternberg (*Manual of Bacteriology*, pp. 357–59), will never again be disputed :

" 1. It is found in ALL undoubted cases of diphtheria.

" 2. It is found *only* in diphtheria.

" 3. Pure cultures of this bacillus induce characteristic diphtheritic inflammations when inoculated into the mucous membrane of certain lower animals."

The suggestions contained in these statements lead irresistibly to the conclusion that the bacteriological diagnosis of diphtheria has assumed a degree of importance to which it has never heretofore attained, and that the accurate differentiation of the true disease from all other pseudo-membranous anginas is quite within our power.

Furthermore, it may safely be regarded as proven that, with the possible exception of those fulminant cases having concomitant epidemic surroundings with such unmistakable clinical evidences as that the diagnosis is obvious from the beginning, it is impossible to make an absolutely certain diagnosis, except by the aid of bacterial cultures with subsequent microscopical observation.

Another result obtained by a combination of clinical observances and bacteriological study and experiment, and which is of the greatest significance diagnostically, is the new differential classification to which reference has been made. This may be stated as follows :

1. True diphtheria—in which the characteristic bacillus is invariably found in the exudate and the discharges.

2. Pseudo-diphtheria—in which the various forms of cocci are present, notably the staphylococcus and streptococcus pyogenes. This class is subdivided, according to Park, into—

(*a*) Pseudo-membranous angina.

(*b*) Pseudo-membranous laryngitis.

(*c*) Croupous tonsilitis.

(*d*) Follicular tonsilitis.

(*e*) Acute pharyngitis and tonsilitis without exudate.

(*f*) Cases similar to all the foregoing, but complicating infectious diseases.

Under this classification the whole subject of the diagnosis

of diphtheria must, by the logic of the situation, be totally revolutionized, and, in fact, the therapeusis as well; for I venture to state that all the images destroyed by the decrees of the iconoclastic emperors of the eighth and ninth centuries did not exceed in number the therapeutic idols in the line of "new treatments" with "slight mortality," which will be nullified by its application. Hereafter all statistics relating to the success of any vaunted treatment, in which the separation of the false from the true disease has not been observed bacteriologically, will have not the slightest value. The mortality rate must now be based upon the presence or absence of the specific germ. Illustrative of this, let me call to your attention some comparative observations:

Baginsky, of Berlin, reports a series of 154 cases studied by bacterial cultures, in 118 of which the characteristic bacillus was found, while the remaining 36 were of the so-called coccus, false or non-infectious variety. Martin, of Paris, examined 200 cases with the result of finding the Löffler bacillus in 128, and the various cocci in 72.

The combined results of the extensive examinations made by Park and Koplik, of New York, show that in 274 cases 140 were true and 134 were false.

The aggregate of the above-reported cases is 628, of which 386 were proven to be true diphtheria, while 242, or about 62.6 per cent, were unquestionably false. The mortality rate ranged as follows: In the cases in which the Klebs-Löffler germ was found, from 26 per cent to 46.5 per cent; in the pseudo-diphtheria cases, from one death in 31 cases to 5.66 per cent. Thus it may be noted the relative mortality is very similar to that of variola and varioloid, although, of course, in an etiological sense they are entirely dissimilar.

It must be borne in mind that all these cases reported were clinically diagnosticated as *true diphtheria*. These observations have since been confirmed by the records of the New York City Board of Health and the Department for Contagious Diseases of the Boston City Hospital, and while the 62.6 per cent of erroneous diagnoses, obtained by the aggregation of cases above noted, may be a trifle higher than might otherwise be shown, it is perfectly safe to assume that quite 50 per cent of all cases now and formerly diagnosed

and treated as diphtheria are in reality not that disease at all.

What a commentary upon the ordinary methods of clinical definition, and what a promise is implied therein for the future differentiation and management of this dreadful scourge!

I do not attempt an elaboration of the technique of the various methods devised and recommended for the specific diagnosis which it has been the purpose of this paper thus far to show the importance of, but will content myself by stating that with the appliances at hand and the ordinary skill which is acquired by most of the students of our advanced schools of instruction at the present time the process is not a complicated one. The most convenient method for early diagnosis consists simply in conveying, by means of a sterilized cotton swab, a small portion of the visible exudate or a minute particle of the membranous deposit from the throat of a suspicious case to a proper culture medium, such as glycerine-agar or solidified blood serum, which has previously been rendered sterile and placed in glass test tubes. Inoculation of these tubes can be conveniently done directly at the bedside of the patient, and the tube may be subsequently placed in a thermostat or incubator, and a temperature of 37° C. (98.6° F.) maintained for from twelve to fifteen hours, when the bacillus if present will be found to have been abundantly cultivated. The culture can then be removed with a platinum loop, stained and mounted in the usual manner in balsam for subsequent examination by the microscope. A sterilized potato surface will furnish a medium for their growth in many instances which will be quite satisfactory for diagnostic purposes. Indeed, a smear of the suspected material upon a cover-glass made with the sterilized swab with subsequent staining and mounting will suffice in some cases, although it is not considered absolutely reliable. Simple as this may seem to those who are familiar with bacteriologic practice, the question will at once arise in your minds, Can it be made available in a general point of view, and how? *I* am fully persuaded that it may, in spite of the fact that it calls for a knowledge and experience which, it is no disparagement to say, cannot be expected in the ordinarily busy general practitioner, who, in the main, has never had the advantage of technical instruction

in the new science which has developed almost within the decade last past, and before I close I will endeavor to suggest a plan that, in my judgment, will furnish a satisfactory answer to the question, providing the public authorities can be brought to a proper appreciation—a thing which, I must admit at the outset, is most difficult to accomplish.

As is doubtless well known to most of those who listen, the New York City Board of Health has recently instituted a most commendable practice relating to the diagnosis of diphtheria, the importance of which to the public health cannot be overestimated. By a division of the city into sanitary districts, and the organization of a system of communication from certain appointed stations therein with the Department of Pathology and Bacteriology, which latter was successfully established some time ago, the practitioners of the city are enabled to have a reliably exact diagnosis made for them in all suspected cases without expense to their patients or themselves in from twelve to twenty-four hours. The necessary culture tubes are furnished free to all physicians applying for them at the several stations, and they have only to swab the throat, make the inoculation of the culture medium, plug it with sterilized cotton, and transmit it to the laboratory of the department by way of the stations, and the true diagnosis is returned to them at the earliest practicable time. Barring the loss of time required to obtain the natural growth of the germ, could anything more satisfactory be desired?

Here, at least, is one instance where practical application keeps pace with scientific advancement, and its value, both practically and theoretically, is promptly manifested. Already by incidental studies and experimentation several very interesting and significant contributions have been made to the general subject, some of which have a most important bearing upon public sanitation, as well as individual concerns. For example, during the first three months of the operation of the plan 405 cases of true diphtheria were examined, not only for diagnostic determinations, but the observations and cultures were repeatedly made during the continuance of the disease and during convalescence, until the final disappearance of the bacilli. This resulted in demonstrating the fact that in 245, or about 60 per cent, of the cases the bacillus could not be

found three days after the false membranes had disappeared. In 103 the bacillus persisted for seven days, in 34 for twelve days, in 16 for fifteen days, in 4 for three weeks, and in 3 cases for five weeks. So that, according to this, in about 1.7 per cent of all cases of true diphtheria the subjects are capable of communicating the disease to others for more than three weeks from the time of the complete separation and discharge of all visible exudate from the throat.

This means much to the subject of isolation and quarantine detention, and has led the Board to promulgate a rule requiring that no case shall hereafter "be considered free from contagion" until bacteriological examination shows the characteristic organisms to have entirely disappeared from the throat secretions, and until that time arrives each case shall remain isolated and no disinfection of the premises be practised. These observations also reveal the fact that where antiseptic solutions were faithfully used during the progress of the disease the bacilli disappeared with the most marked rapidity during convalescence.

Following the example set by this admirable scheme of the Health Department of the great metropolis, several other cities of the Union are considering the propriety of instituting similar systematic organizations, and in due time, no doubt, the physicians of all the principal cities will have the same advantages as those of New York.

Influenced by the suggestions apparent herein, it has for some time past seemed to me that this great innovation in public health administration need not necessarily be restricted to the large cities, where the opportunities make it so feasible, but that, with the perfected systems of transportation and communication now so universally applicable throughout the State, it may be made available to every village and community within its borders. This desirable result could and should be accomplished by the establishment or designation at various convenient points of local bacteriological and experiment laboratories, in the same general manner that agricultural experiment stations are maintained under the patronage of the general or State Governments at the present time.

It is obvious, of course, that under existing conditions outside of the large cities where, in the State of New York, at

least, greater latitude for municipal management is conferred by special legislation, it would be impossible to bring about such an undertaking as a matter of local sanitary administration—this because of lack of public appreciation, apathy, indifference, and expense—hence it follows that the recognized central authority in all such matters, the State Board of Health, should have general supervision and control, and that, through it, provision should be made for their appointment and maintenance. The scope and utility of these proposed establishments could in due course be enlarged and extended, thus including many other benefits in public health service; so that in addition to furnishing the means for exact and ready diagnosis in incipient and complicated cases of infectious disease, they might be made depots for many other purposes of a scientific character connected with studies in sanitation. For example, water and food analyses, questions concerning drainage and sewage disposal, matters pertaining to agricultural science and diseases of cattle, besides many other pertinent topics relating to the investigation and control of endemic and epidemic influences, most of which will readily occur to the medical mind, could properly and most satisfactorily be made subjects of inquiry at such stations. The advantages of such a system of authorized ready reference to the local health officer of towns and villages would be immeasurable, and I have often heard the desire expressed by those officials for better advantages in these respects.

The entire State, apart from the larger cities, should be geographically districted for this purpose, with especial reference to facilities for transportation and telegraph or telephone communication, and it is believed that this could be done in such manner as that not more than fifteen or twenty stations or laboratories would under present circumstances be required. In fact, there are already many private laboratories in various parts of the State that might be designated which are fully equipped for this work.

It was doubtless just such a general plan as I have indicated which the distinguished Secretary and executive officer of the New York State Board of Health, the late Dr. Elisha Harris, had in mind when he undertook, in 1884, the division of the State into sanitary districts with the object of complying with the act establishing the Board.

Seven districts were then created (since made eight), and within them twenty-three so-called district investigators and experts were appointed for the pursuit of just such work as has been referred to in their respective districts. This fact seems to have been long since lost sight of, however, for under the present *régime* no labor of the kind contemplated has been done by these local investigators, although (my personal modesty compels me to say, with one exception) they are most capable men, and the majority of them have ample facilities. It is very possible, perhaps, that the insufficient funds supplied to the Board by the Legislature has been the principal cause for the abandonment of the original design, which remark makes it pertinent for me to comment for a moment upon the circumstances which would seem to justify the most important and effective objection which can be raised against the proposed method for facilitating bacteriological diagnosis by the public service—viz., the lack of adequate appropriations to properly carry out the scheme. This I have to concede is, unfortunately, a valid one, and would without question be the most difficult to overcome ; as the inappreciation of the average legislator, like that of the average citizen, who views such matters very much in the abstract, has come to be proverbial. It is a well-known fact that, in a general point of view, the present attitude of the Board of Health of the State of New York, and those of many other States of the Union, to the subject of public sanitation does not reach that high plane of utility and comprehensiveness which corresponds with the advanced ideas of modern civilization and sanitary science, nor indeed with those which are contemplated by the laws which gave them birth ; and in what I have to say upon this branch of my subject I desire distinctly to disclaim any intention to reflect in any manner upon the work which these boards are accomplishing. They are, in fact, entitled to the greatest credit for what they *have* accomplished, in consideration of the obstacles with which they have had to contend, and no one doubts that with the executive skill and scientific talent at their command and proper financial encouragement, far more comprehensive results would be attained. I simply wish, because it is relevant to the foregoing suggestions, to call attention to certain facts which lack consistency, and to

urge the importance of further effort to secure the means to the end that theory and practice in public health affairs may be combined for the public good. It is notorious that the three wealthiest and most populous States annually appropriate the smallest amounts per capita of those which have State boards. New York appropriates 5 mills; Pennsylvania, 1.14; Illinois, 2.33; Massachusetts, 21.66; New Jersey, 11; Maryland, 13; while little Rhode Island, with characteristic enterprise and a population of only 345,506, sets apart for its board 8.66. In this connection it will be interesting to carefully observe the following table, showing relative differences in wealth, population, and annual appropriation in the principal States, which was compiled and kindly sent to me by Dr. Benjamin Lee, the able Secretary of the Pennsylvania State Board:

STATEMENT SHOWING USUAL AMOUNT OF ANNUAL APPROPRIATION TO THE PRINCIPAL STATE BOARDS OF HEALTH IN THE UNITED STATES, IN THE ORDER OF COMPARATIVE WEALTH.

State.	Estimated Wealth, 1880, U. S. Census.	Amount of Appropriation.	Population, 1890, U. S. Census.	Expense per Capita.
New York	$6,308,000,000	$30,000	5,997,853	5.00 Mills.
Pennsylvania	4,942,000,000	6,000	5,258,014	1.14 "
Illinois*	3,210,000,000	9,000	3,826,351	2.33 "
Massachusetts	2,623,000,000	49,000	2,238,943	21.66 "
Michigan†	1,580,000,000	6,000	2,093,889	2.88 "
New Jersey	1,305,000,000	16,000	1,444,933	11.00 "
Wisconsin	1,139,000,000	5,200	1,686,880	3.06 "
Maryland	837,000,000	13,600	1,042,390	13.00 "
Minnesota	792,000,000	9,000	1,301,826	6.88 "
Alabama	428,000,000	9,000	1,513,017	5.88 "
Rhode Island	400,000,000	3,000	345,506	8.66 "
Louisiana‡	382,000,000	70,000	1,118,587	62.50 "
New Hampshire	363,000,000	3,500	376,530	9.33 "
Florida§	120,000,000	21,000	391,422	54.00 "

It cannot but be considered absurd that the great Empire State of New York, with its population of full 6,000,000, and

* Illinois. This Board has a special fund of $40,000 for emergencies.

† Michigan. This Board has a special fund of $10,000 for emergencies.

‡ Louisiana. Partly for quarantine purposes.

§ Florida. Partly for quarantine purposes.

NOTE.—The Pennsylvania Board is required to do the work of local boards outside of large cities, which is not the case with other State Boards.

material wealth amounting to more than $6,308,000,000 (census 1880), should enact a law establishing a State Board of Health, confer upon it extraordinary powers and privileges, impose upon and make it responsible for a host of duties relating to the public welfare by sanitary administration, and annually dole out to it the munificent (?) sum of $30,000, or 5 mills *per capita*. In other words, every man, woman, and child in the State, whose apparent share in the public wealth is more than $1400, is taxed the enormous amount of one half of one cent per year for the purpose of devising and applying the means for promoting that inestimable blessing—the public health! On the other hand, it is stated that upward of $1,200,000 is annually spent for the maintenance of commissions and bureaus, that in most instances do not make adequate return, the secretaryships of some of which are salaried in excess of those of the Secretary of State, State Comptroller, State Treasurer, Attorney-General, State Engineer, and even the Lieutenant-Governor!

These facts speak for themselves, and extended argument is certainly not required to point the moral which they most vividly convey.

Let us each and all resolve that we will exert every influence to correct this incongruous and contradictory state of affairs.

There should be set in motion a wave of popular protest against these glaring defects, whose swelling increments would cause it to assume such proportions that it would be irresistible even to the unimpressionable legislator, and whose potent voice would proclaim in unmistakable tones the ancient maxim: "*Salus populi suprema est lex.*"

It seems that this and this only, in the absence of calamitous pestilential visitation, would serve to arouse the dormant interest in this vitally important subject.

Characteristically, some specious objections have been urged against the innovation proposed in this article, many of which are, in the light of existing facts, absurd if not amusing. For example, it has been said by physicians unacquainted with the practical technique of bacteriology that the public funds ought not to be applied for such a purpose, as "all practitioners should be able to make a specific diagnosis for them-

selves." As well might it be thought that all general practitioners should be able and have the time and apparatus at their command to satisfactorily perform all the elaborate technical labors which are by common consent and force of circumstances made subjects of the various special departments of professional study and practice.

It has even been said that the establishment of such a system under the patronage of the State would "tend to make physicians lazy!" Such arguments (?) need only to be mentioned. Their complete refutation is readily found in the prodigious growth of medical science in recent years; and surely the Hippocratic adage, "*Ars longa, vita brevis,*" was never more impressively or increasingly applicable.

The principal points which I have sought to emphasize in the foregoing somewhat desultory considerations may be epitomized by the following conclusions:

1. That the identity of the Klebs-Löffler bacillus is now established beyond controversy as the characteristic pathogenic germ of true diphtheria.

2. That this fact has led to a differential classification into diphtheria and pseudo-diphtheria, of which latter there are numerous varieties.

3. That it can readily be demonstrated that at least 50 per cent of all the cases clinically diagnosed as diphtheria, and managed and treated as such, are not the true disease.

4. That a specific diagnosis cannot be made macroscopically or clinically, a bacterial culture and subsequent microscopical differentiation being required.

5. That it is manifestly impossible, under existing conditions, for the general practitioner to correctly diagnosticate the disease without laboratory facilities and accurate knowledge of technique.

6. That in view of this latter fact, and the serious relations which this subject bears to the public health, special sanitation, quarantine detention, relative statistics of the disease and mortuary records, the State, through the management of the State Board of Health, should undertake the specific diagnosis at the instance of the attending physician, in all cases admitting of the slightest doubt.

7. That district laboratories should be established and main-

tained at public expense (which could be made available for many other allied investigations) in various parts of the State, which should be geographically districted for the purpose with especial regard to transportation, telegraph, and telephone communication ; and that with such facilities the general practitioner throughout the State, however remotely situated, would be in position to get an accurate and reliable diagnosis transmitted to him in twelve to twenty-four hours, in the same manner as is at present practised in New York City.

8. That at the present time, with the ridiculously small amount annually set apart for the use of the State Board by the Legislature, such a reform could not be successfully inaugurated.

9. Hence it should be the duty of the profession, likewise the public, to organize a most determined movement to bring about an increase of the annual appropriation in order that this, and many other subjects of investigation originally contemplated by the law, may be faithfully put in execution.

These suggestions and propositions are offered in the hope that they may eventually bear fruit, and that patient labor in the attractive fields of science may yet be duly and truly appreciated.

Time was when the barbarous superstitions of barbarous races of men led to the propitiation of highly imaginative and impossible gods, as the only relief from pestilential woes.

Time is when the search-light of science has penetrated the inmost secrets of nature, and with marvellous precision has disclosed and traced the true relations of the causes, the effects, and the cure.

Time will be when, by the harmonious association of scientific attainment with practical application, suffering and sorrow will cease, and human life in length and happiness will be a glorious reality and not, as now, a fitful, troubled dream. All hail that day !

ARTIFICIAL IMMUNITY.*

By Henry Reed Hopkins, M.D., Buffalo, N. Y.

The traditions and the history of the art of medicine have ever asserted the fact of the remarkable exemption or immunity of certain races or individuals from attacks of communicable disease to which their less favored neighbors were liable. The findings of the science of Medicine in her investigations and experiments upon the reactions of various contagia upon the lower animals reveals the existence of a similar variation in immunity, proclivity, susceptibility, and is already well advanced in the most ambitious and far-reaching of human endeavor—the attempt to discover the secret of the immune, in order to possess the God-like power of extending his inestimable blessings and advantages to his less-favored brother, the susceptible.

With truth and soberness it may be said that there does not exist, and there never has been, a more attractive, a more potential scientific investigation, than the study of artificial immunity.

To the elucidation of this problem, Medicine is at this moment devoting her highest art and her most profound science, her most creative enthusiasm and her most cautious, painstaking, and accurate technique.

Let us recall some of the primitive conceptions embraced in this consideration. The well-attested observation that certain races, families, or individuals possessed a peculiar exemption from the attacks of a given disease—for instance, the dark-skinned races from ague—led our forefathers to recognize the condition which we know as immunity—that the individual who was immune to a given disease was to that form of illness disease-proof. Continuous and contemporaneous with these interesting observations ran a similar set, resulting in the conclusion that certain individuals had the misfortune to be

* Read at the meeting of the Medical Society of the State of New York, Albany, February 8, 1894.

the pathological antithesis of the previous class, differing from the average of their kind in the opposite direction, and their situation or relation to disease the fathers were wont to indicate by the terms proclivity, susceptibility.

Here it is worth noting, for the observation may be found of some little significance, that as the fathers recognized instances of wide variation from the average reaction of individuals to acute disease, they also noted that individuals frequently reacted singularly to the operations of certain well-known remedies—that in one class the usually efficient dose would be found utterly inefficient, while in the opposite class extreme or poisonous conditions or effects would result from the exhibition of what was usually considered perfectly harmless and suitable doses. These interesting facts are still grouped about that most fascinating and puzzling term, idiosyncrasy.

The prosecution of the theory of the bacterial origin of infectious disease has brought us many important new truths; not the least of these, in interest and suggestiveness, is the fact of the communicability of many of our infectious diseases to our neighbors, the lower animals. Had the observation not extended beyond this point, it still must have been regarded as one of the utmost practical importance and suggestiveness, but already the party of exploration are sending back news from much higher altitudes, and we hear from many laboratories that the same veins, the rich ore-bearing—veins immunity, proclivity, susceptibility—known for ages to run among the children of men, are also found, and in a more marked degree, in the lower animals. Moreover, these veins, as seen in the lower animals, are workable, are being worked, and the precious metals, the silver and gold of scientific therapeutics, laid up in these everlasting hills of the bacteriologist, the rabbit, the guinea-pig and the mouse, are now in sight—in fact, the metallic bars are now in the assayer's office, or on the way to the mint, waiting for the final test and stamp as coin of the realm of scientific medicine.

The questions which the bacteriologist would answer in this investigation: 1. What is the nature of the change wrought in the individual, child or adult, by an attack of disease, scarlet-fever, small-pox, or vaccinia, whereby the individual ceases

to furnish the requisite culture media for the maintenance and growth of that particular bacterium, known to cause, or to be most intimately associated with the cause, of the particular disease? 2. How far does this principle of immunity, natural or acquired, extend among the infectious diseases? 3. How far may we extend the condition of artificial immunity for the cure or prevention of disease?

A slight knowledge of the rapidly increasing literature of this subject convinces the writer that satisfactory progress is being made along the lines of each of these inquiries. Regarding the character of natural immunity, perhaps the progress has been the most disappointing, but even in this direction valuable observations or discoveries are reported. We may so consider the observations of Nuttall, Buchner, and others upon the aseptic or anti-infectious property of the blood serum of the immune animal, this quality having been found in several instances to be in direct proportion to the degree of the individual's immunity.

Most intimately related to this thought is the discovery of Koch, as to the different methods by which bacterial invasion produces disease—methods which he proposes to recognize and distinguish by use of the terms bacterial infection and bacterial intoxication. In bacterial infection, the micro-organism —for instance, the bacillus of anthrax—gains admission to the body of the susceptible individual, and very soon rapidly increases in numbers, and literally swarms throughout the entire body, invading every organ and tissue. Such micro-organisms appear to be inimical to their host wholly or in the main in a mechanical or negative manner; mechanically by blocking the capillaries, and thereby arresting the circulation of the blood and consequent functional activity, and negatively, by robbing the tissues of nutrition used in their own upbuilding, particularly of oxygen. The method of attack in cases of bacterial intoxication is quite different from the foregoing, and introduces new and most important characters, ptomaines and tox-albumins which may be indicated by the single word toxines. Tetanus, typhoid-fever, diphtheria, cholera, and possibly tuberculosis are instances of disease produced by bacterial intoxication.

In these diseases the method of invasion may be the same

as before, but the behavior of the micro-organism of the disease, from the moment of invasion, differs widely in the following respects: In bacterial infection the micro-organisms tend to increase and multiply rapidly, to go, and to grow anywhere and everywhere; in bacterial intoxication the micro-organisms tend from the first to grow only on certain tissues and in certain localities, to produce local disease, but with their growth they elaborate a virulent poison, which gains admission to the blood, circulates with the blood, and by doing the work of an irritant poison upon the sensitive and susceptible tissues of the various organs of the body, or some of them, produces the given disease.

These poisons of bacterial origin are of two kinds, ptomaines and tox albumins; the former are crystalline, alkaloidal bodies, the latter are colloidal. The important rôle these animal poisons are likely to play in our knowledge of and management of the infectious, the preventable diseases, we may get a hint of when we hear that, although of bacterial origin, they may be produced at will outside of the body, and yet when introduced into the susceptible individual, with or without their particular micro-organisms, they invariably produce their specific diseases, each after his kind.

The possession of knowledge of the precise kind, as to the method of the production of bacterial disease, as indicated by the above statement, has resulted in a decided advance of our thought, relating to artificial immunity, and we now know that an animal may have immunity of two distinct kinds—namely, from bacterial infection and from bacterial intoxication; and our experimenters seem to have demonstrated that an individual may have one without the other, and that in the near future infectious diseases are to be treated or prevented by an increase and right use of our knowledge of both these processes.

Results of experiments bearing upon the condition bacterial intoxication seem to be the most important and suggestive, and appear to establish the following facts: That there resides in the blood serum a chemical substance, or substances of vital origin, by some called defensive proteids, or anti-toxines, which substances possess the power of rendering pathogenically inert and harmless the ptomaines and tox albumins, the

disease-producing agents, in all cases of bacterial intoxication. That the organism has the ability of producing these defensive proteids, anti-toxines, as their peculiar services are required for the protection of the individual, as seen in Pasteur's treatment for hydrophobia, until their presence and protective activity in the blood, in much more than that of normal ratio, is demonstrable. When an individual is by suitable treatment brought to such a state as to receive with impunity that which is ordinarily a fatal dose of a given ptomaine or tox albumin, the individual is said to be poison proof. And to render the susceptible poison proof, whereby he ceases to be susceptible and becomes immune, is to-day the highest ambition of the art and the science of medicine.

Information regarding this most interesting condition of artificial immunity, poison proof, points to the fact, as we just observed, that it may be acquired, and that when present, either by nature or by acquirement, the fortunate possessor, if a female, may transmit the same to her offspring, and what seems to be most fortunate, the milk of the poison-proof mother renders the young almost equally immune. Experiments also indicate that the blood of the poison-proof animal has high curative powers in cases of the given disease occurring in his own kind or in man. Observers also seem to be quite in accord in this testimony, as to the complete individuality of the action of the various toxines. An animal poison proof against a given disease—tetanus, diphtheria, erysipelas, or pneumonia—has thereby not the slightest protection against any other disease.

The writer is well aware of the fact that medical enthusiasts usually have early cause to regret their enthusiasm, and that the rôle of prophet is not popular in this, the closing years of the nineteenth century, and yet ventures to proclaim with enthusiasm the dawn of a new era in medicine, when from a truer knowledge of temperament, proclivity, susceptibility, idiosyncrasy, immunity and artificial immunity, the art of the treatment of disease and the prevention of disease will attain such eminence, and accomplish such results, as heretofore have been attained and accomplished only in dreams.

DANGEROUS OCCUPATIONS.

THE present Home Secretary, the Right Hon. H. H. Asquith, has turned his attention to the question of dangerous occupations, and within the past few days two reports of department committees have been issued regarding them, on "Various Lead Industries," and on "Potteries," respectively. The former is the more important of the two, as the industries in question are notoriously dangerous, particularly that dealing with the manufacture of white lead. For some time past much has, however, been done to render it less noxious to the workpeople by the issue of rules which require the employers to provide overalls and respirators for use in certain processes, and also accommodation for washing and bathing. The employer is required to see that the workpeople wash faces and hands before each meal-time, and take a weekly bath. He has to provide all necessary appliances for these purposes, and insist on their use. By these means the constant absorption of lead through the skin is greatly reduced; the overalls prevent the clothes becoming fouled, while the cleansing prevents lead particles being carried into food, or accumulated under the nails and in the pores of the skin. To minimize the absorption of lead-dust, the plates of lead-carbonate are required to be wetted before they are removed from the "white beds," and again at the crushing mills. But in spite of these precautions much dust is created. That this is so will be understood from a description of the process of manufacture. Gratings or thin plates of metallic-lead are made into stacks within a brick cell. This is done as follows: The floor of the stack is first covered with a layer of tan; on this are arranged as closely as possible stoneware pots filled with dilute acetic acid, and on the top of these are placed four or five layers of lead-plate. The whole is covered over with boards, forming a second floor, upon which fresh layers of tan, pots and plates are arranged. This is in its turn covered in the same way, and so on until the stack is full, as many as ten or more layers going into one

stack. When it is complete, it is closed and left ten to fifteen weeks; the tan heats and evolves carbonic acid, the heat volatilizing the acetic acid. Chemical action between the lead, the carbonic acid, the acetic acid, and the air takes place, leading through a series of changes not clearly understood to the ultimate production of an amorphous basic carbonate of lead, or white lead. When the process is supposed to be complete, the stack is opened and taken to pieces. The corroded lead-plates are carried in trays, generally by women, to corrugated rollers, over which there passes a constant stream of water. In front of these rollers the corroded lead is tipped, after being dipped in water or thoroughly wetted by a hose, otherwise much dust arises, and even this does not entirely prevent it. In passing through the rollers the white lead is separated from any remaining blue or metallic lead. The crushed material next passes into a shallow tank, having a perforated bottom, in which it is raked about, completing the separation. The blue lead is raked out, and the white lead passes with the current of water to grinding-mills, where it is ground up and run into a series of washing tanks or becks. Here the lead settles, and the water is run off; the white lead is then removed, put into earthenware or copper pans, and placed in drying-ovens. There it remains from three to five days; the pans are taken from the ovens by hand labor, and the dry white lead is either packed directly in casks or thrown into bins for subsequent conversion into paint. The emptying of the ovens and the packing of the white lead is necessarily a very dusty operation, since the white lead, being perfectly dry and friable, rises readily as dust.

Such is the general outline of the process. The chief danger arises from the inhalation of the dust, which is carried directly into the lungs, and also by the saliva into the stomach. There is also danger from absorption through the skin, and by particles being dropped into food from the hands. These two latter are fairly provided against by the present regulations, and it is to the former that the committee directed their principal attention. They found, by inquiring of the medical officers connected with the various works, that women are more susceptible to lead-poisoning than men, and young girls than full-grown women. It is well known that lead is capri-

cious in its action on the human constitution, and that while some can resist its effects almost perfectly, others succumb very readily. From the evidence taken it would appear that a strong organization is the best defence, and that consequently the weaker sex are the chief sufferers. As it is impossible to predict what will be the effect of the absorption of lead on a given person, the committee have taken the bold course of recommending that no female labor be permitted after January 1st, 1896, in the white beds, the rollers, the wash becks, the stoves, or in packing dry white lead. Practically this covers the entire manufacture, and, if the recommendation be adopted, must have very serious consequences on the trade.

It is little less than a revolution to prohibit women working at a manufacture that has hitherto been carried on almost entirely by them. It means either that higher-priced male labor must be employed, or that machinery must be adopted as far as possible. Engineers are not likely to grumble at this latter alternative; at some of the best-organized works many of the processes are conducted by automatic mechanism, and in all machinery might be adopted to a greater extent than it is. It shows how crude processes survive when labor is cheap and ignorant, when we relate that, in forming the stacks, in some works women carry on their heads plates of lead, varying from thirty to fifty pounds, up ladders ten feet to fifteen feet high. At others, women cast these plates from the molten lead. Evidently the owners need some pressure brought to bear upon them in order to enable them to recognize that they live at the close of the nineteenth century, and to see that not only is it indecent to allow ignorant women to continue in such tasks, but also that it is uneconomical. The disinclination that we should otherwise feel in concurring in the recommendation to abolish female labor at two years' notice is a good deal reduced by the knowledge that it is now used, in part, for such unnecessary purposes.

From time to time processes for the manufacture of white lead in a perfectly innocuous manner have been placed before the public, and some of these are now at work, but their output is, relatively, so small that the committee pass them over in a few words. Foreign competition in white lead is so

severe that regulations demanding a radical change in its method of manufacture would kill the home industry entirely. Besides white lead, there is manufactured sulphate of lead, red lead, orange lead, litharge and yellow lead. None of these latter are so poisonous as white lead, and beyond general recommendations concerning ventilation and personal cleanliness the committee have little to suggest.

The Potteries Committee of Inquiry found that the chief evil they had to deal with was the dust of clay and flint. These have a serious effect on the health of the workers, setting up inflammatory action in the lungs, and ending in gradual consolidation and abolition of the functions of the organs. Analysis of the mortality returns for males above the age of fourteen for the year 1890, of the Parish of Stoke-on-Trent, including the county borough of Hanley, the boroughs of Longton and Stoke, and the large town of Fenton, show that, of the total mortality from all causes among potters, bronchitis accounted for 42 per cent, pneumonia and pleurisy 8 per cent, and pulmonary consumption 21 per cent. Thus 71 per cent of the deaths arose from chest disease. Among pressers, bronchitis was the cause of death in 47 per cent of the cases, and other lung diseases in 7 per cent; pulmonary consumption accounted for 21 per cent. In this class, therefore, 75 per cent die from chest diseases. In males above fourteen, living in the district, but not engaged in pottery labor, diseases of the chest produced 26 per cent, and pulmonary consumption 14 per cent of the deaths. The dust is not directly poisonous, in the ordinary sense of the word, but it is so deleterious that the average length of life among potters is forty-eight years, while among non-potters in the district it is fifty-three years. It is evidently impossible to abolish clay and flint in the pottery trades, or to prohibit adult male labor, and therefore the committee could only insist on improved ventilation and greater cleanliness.

Lead-poisoning also occurs in the potteries from the glazes employed, and is especially liable to attack young women and lads, especially if they are ill-fed or debilitated. The bad effects of the lead are, however, being gradually reduced, as shown by the statistics of the hospitals and the experience of medical men. This is probably due to greater personal clean-

liness, to an improved standard of living, and possibly to increased intelligence among the workers. The committee suggest that in future no child under fourteen be employed in the dipping-house or the dippers' drying-room, or in any process of ware-cleaning after the dippers, glost-placing, china-scouring, ground-laying, or majolica painting, or in any process in which lead is used. Overalls and head-coverings are to be provided for all workers exposed to lead dust; no food is to be eaten in a room in which lead is employed; efficient ventilation and daily cleansing are to be provided for; washing appliances are to be supplied; excessive temperature in the workshops is to be avoided, and no female under sixteen years of age is to be employed at treading the lathes used by turners.

These recommendations are much less drastic than those propounded by the Committee on Lead Industries, the danger to be met being less imminent. They amount to little more than common-sense suggestions that any humane employer would wish to carry out. It is evident, however, from the tone of the report, that greater opposition is to be expected from the workpeople than from the employers. Dust is preferred to draughts, overalls are found to be irksome to work in, scrupulous cleanliness involves more trouble than workpeople often care to take, and in many ways the proposed reforms will provoke opposition. The position of an employer thus becomes very unpleasant. He is urged to spend money and thought for the benefit of his workpeople, and he finds his efforts resisted by the very persons who reap the gain of it. He must console himself by the reflection that were it not for this want of thought—this preference of present ease to future well-being—he would find it difficult to obtain hands, and would have to pay greatly increased wages for those he did get. It is undoubtedly true that the office of the Inspector of Factories is as much concerned with workpeople as with employers, and that a constant and steady pressure is required to bring both parties up to the level of practice which both admit to be desirable. One great use of these inquiries will be to demonstrate to the laborers that they must bear their part in the steps taken for the preservation of their health.—*Engineering.*

THE MODERN RAIN-BATH.

By WILLIAM PAUL GERHARD.

SINCE the first introduction of the so-called "rain-baths" in Germany, I have followed with keen interest and attention the gradual development and rapid spread of this new system of baths, and as it has been my good fortune to have been connected with the planning and construction of the majority of rain-baths installed up to date in this country, it occurred to me that a brief description of the new system would be of interest to the readers of the *American Architect.*

The form of shower or douche used in the rain-bath is not, in itself, new, for it has long been used in connection with the common bath-tub, and it has also been used separately in isolated cases: for instance, as an adjunct to swimming and Turkish baths, or in gymnasiums and athletic club-houses. In the modern "rain-bath" system, however, as recently advocated and applied, *tubs are entirely abolished*, simple douche or shower baths being substituted for the same and being installed as a distinct and independent form of bath. This does not, of course, apply to bath-rooms in private houses, but only to public baths, and to baths for institutions, for manufacturing establishments, for schools, etc.

One feature of construction is novel and of much importance—*i.e.*, *the inclined angle at which the douche is placed in the rain-bath*, the object being to avoid a vertical stream from the douche striking the head of the bather, which to many persons is quite disagreeable. In the new form of rain-bath the bather stands erect under the douche, which is inclined in such a way that the lukewarm water strikes the body only from the neck downward, and the head is not wetted except when the bather purposely places the same under the descending shower of water.

The advocates of this novel method of bath-construction claim the following chief advantages for it as against bath-houses fitted up with the usual form of bath-tubs:

1. The first outlay for construction is considerably reduced, because the douches are cheaper than bath-tubs. Likewise are the running expenses for maintenance and repairs reduced, because the apparatus is simple and not liable to get out of order, because douches last longer than copper or enamelled-iron bath-tubs, and because repairs, if needed for such baths, are not considerable in extent.

2. In public bathing establishments the douche or rain-bath system is much more economical in management than the tub system, for the douche or shower-bath is always ready for use and requires but very little attendance. No time is lost as in the filling of the ordinary bath-tubs, and in the subsequent emptying, cleansing, and scrubbing of the sides of the tub after each bath.

3. The douche or rain-bath, while more efficient, consumes less time in application, consequently a larger number of people can take baths in a given time than where bathing is carried on in tubs.

4. The rain-bath requires less space in the planning of a bath-house as compared with the same building when fitted up with bath-tubs. In other words, more bathers can be accommodated in a given space.

5. *The body of a person using a rain-bath does not come at all in contact with soiled water*, as is the case in bathing in the ordinary bath-tub, for in the rain-bath the water from the douche passes away as waste water through an outlet in the floor almost as fast as it is delivered. This is one of the leading arguments in favor of the new method, and it is of particular importance in the case of baths for workingmen or factory employés, of baths for school-children, and of people's baths in tenement districts.

6. The mechanical and tonic effect of the descending stream in the rain-bath is superior to the tub-bath, both in thoroughly cleansing the body and producing a stimulating effect and good hygienic results, whereas a bath taken in a common bath-tub instead of refreshing the body often has a debilitating effect.

7. The rain-bath requires somewhat less water than a tub-bath, which consideration is of importance where water is given to consumers by metre measurement, which is gener-

ally the case in public baths and public institutions. The exact proportion between amount used in a tub-bath and amount needed for a rain-bath differs according to the construction, the number and the size of the perforations of the douche, the available water pressure, and the length of time during which the douche is kept running. The saving of water, as quoted by Dr. Lassar and others, appears to me to be somewhat exaggerated. Experiments by actual metre measurement, carried out by the writer at the Demilt Dispensary, showed that whereas the tub-bath (a short French-shaped enamelled-iron tub) requires about forty-five gallons, the rain-bath, with an ordinary douche kept running for three minutes, requires about twenty-two and one half gallons (seven and one half gallons per minute), or, in other words, about one half the amount required for a tub-bath. Three minutes for each bather is the time allowed in the case of military barracks in Germany ; a workman or mechanic would, in all probability, require the douche to run somewhat longer to effect a thorough cleansing of the body, hands, and face after his work.*

8. Compared with swimming-baths the rain-bath affords a greater degree of privacy, and it can be used both in summer and in winter, whereas the free swimming-baths of many cities are only available during the summer season.

9. Finally, the danger of communicating disease is somewhat reduced, because no impure, infectious, or contagious matter is left in the bath, as might easily happen where the bath attendant is either hasty or careless in the cleansing of the tub.

What appears to have been the first rain-bath was constructed as early as 1857 by Dr. Duval in a military barrack at Marseilles.

Dr. Alexander Bresgen, surgeon in the Prussian Army, in a pamphlet on baths published in Germany in 1871, was the first to

* Since writing the above I have received some douches from Germany, such as are largely used there in rain-baths, and I find these douches considerably smaller in diameter and with holes less in number and less in diameter than used here. These douches run on an average from two and one half to three gallons of water, with a water pressure of from twenty-five to forty pounds per square inch.

advocate the general introduction of rain-baths instead of tub-baths for all public institutions, enumerating in particular military barracks, prisons, hospitals, and factories. Attached to his pamphlet is a plan of an octagonal bath-house with sixteen bathing apartments with overhead inclined douches, and he figures that one hundred and twenty soldiers can bathe in one hour.

The celebrated French engineer and architect, Tollet, in a pamphlet published in 1877, and entitled "La Reforme du Casernement et les Bains-douches," Paris, 1877, submitted plans for three types of rain-baths suitable for military needs.

In the *Revue d'Hygiène* for 1879 Monsieur Vallin describes a primitive form of rain-bath used in an asylum for homeless women and children in Paris.

The first progress toward the general use of rain-baths was made in the case of military barracks and of prisons. At the suggestion of Dr. Munnich, surgeon-in-chief of the regiment, rain-baths were installed in 1879 in the armory of the Emperor Franz Joseph Regiment of the Guards in Berlin, his aim being to bathe quickly a large number of soldiers. Similar baths were fitted up in the armory of the Infantry Regiment Prince George in Dresden, where twenty-four soldiers can bathe at one time in a large bath-room, also for a cavalry regiment of the Imperial Guards at Potsdam. In 1881 the military barracks of the First Bavarian Infantry Regiment at Munich were furnished with rain-baths. The well-known military school at St. Cyr, France, was also equipped with these baths.

In Pettenkofer's "Handbook of Hygiene," published in 1882, Professor Dr. Schuster, writing about military barracks, states that experiments with tub-baths for soldiers did not prove successful, first because the tubs are expensive, second because of the large quantity of warm water required, and third, because the time occupied in bathing is too great, and his conclusion is that the douche or rain-bath is much more adapted to the needs of the military service.

Again, for bathing in prisons, jails, workhouses, and houses of correction, Dr. A. Baer, of Berlin, recommended in 1882, in the same handbook, the douche or rain-bath in preference to tub-baths. He describes a prison or jail in the city of Münster, which has eight bathing compartments fitted up

with douches, enabling the bathing of nearly three hundred prisoners in four hours.

In the prison of Rouen Dr. Merry-Delabost installed a large rain-bath capable of bathing nine hundred to twelve hundred prisoners in two days.

The credit of having first advocated the use of the rain-bath for people's or public baths belongs to Dr. Oscar Lassar, who exhibited at the Hygienic Exhibition at Berlin, in 1883, the first people's rain-bath, the construction and equipment of which was carried out by the well-known firm of David Grove & Co.

The Berlin Health Exhibition in 1883, therefore, may be said to have given the first impulse to a more general introduction of this new form of bath, and Dr. Lassar since then became the champion advocate of public rain-baths in Germany. The matter received renewed vigor and impetus by the Berlin Exhibition for the Prevention of Accidents in 1889, when a special committee arranged for a competition and drew up a programme for the proper construction and installation of workingmen's baths on the "rain-bath" principle.

Such people's rain-baths were built and constructed in Vienna in 1887, in Berlin, Frankfort, Magdeburg in 1888, in Munich and Hanover in 1889, in Altona, Breslau, Braunschweig, Mannheim, and Mainz in 1890, in Würzburg in 1891, in Cologne, Düren and Mühlheim in 1892, in Leipsic in 1893, and are at present constantly and rapidly multiplying throughout Germany, whereas we hear little or nothing of their use in England or other European countries.

To Professor Flügge and Mayor Merkel of the university town of Göttingen belongs the credit of having advocated and introduced the first rain-baths into the public schools of that city. In public schools, where cleanliness of the body is so intimately connected with the problem of school-room ventilation, such rain baths for the children have proven very successful, and the example of Göttingen was soon followed in other cities, notably Weimar, Sachsenhausen, Magdeburg, Karlsruhe, Mainz, Breslau, Frankfort, and others too numerous to mention.

Rain-baths were likewise soon erected or fitted up in a great many factories and manufacturing establishments, of which

I will only mention the large steel works of Herr Friedrich Krupp, in Essen.

Even on board of steamships the rain-bath has been found useful, and I learn that some of the ships of the German Navy, and likewise some of the fast passenger ocean steamers of the North German Lloyd, are fitted up with rain-baths.

Quite recently rain-baths have been introduced into the United States, largely at the suggestion of a hydropathic physician, Dr. S. Baruch, of New York City, who had an opportunity to visit and inspect some of the European baths built on this principle.

The first American rain-bath was installed at the New York City Juvenile Asylum. Then followed the people's baths in Centre Market Place, the public baths at the Demilt Dispen sary, in the Hebrew Institute, and those erected by the trustees of the Baron de Hirsch Fund at the corner of Henry and Market Streets in New York City. The plans and the construction of the three last-named baths were devised and superintended by the writer, associated with Messrs. Brunner & Tryon as architects. The writer also acted as consulting engineer for the rain-baths erected in the Young Men's Christian Association Building, at Cedar Rapids, Ia., designed by Josselyn & Taylor, architects.

In Scranton, Pa., the Pennsylvania Oral High School Building is being provided with rain-baths from plans of Mr. Theophilus P. Chandler, Jr., of Philadelphia. The factory of J. H. Williams & Co., manufacturers of drop forgings, in South Brooklyn, near Hamilton Ferry, has recently been fitted up by its owner with rain-baths (although with vertical douches) for the employés.

At this writing a large bath-house is in course of construction, from plans prepared by the writer and under his superintendence, at the State Hospital for Insane at Utica, N. Y.

In this country the "rain-bath" is as yet comparatively little known, but its advantages are so obvious that the writer feels confident in predicting a rapid and successful development of the new form of baths. Since the opening of the Baron de Hirsch Fund Baths the writer has had numerous inquiries about rain-baths from Philadelphia, Chicago, Boston, Cleveland, and also from Southern cities, and he has learned

that in Philadelphia the erection of a large people's rain-bath is now being contemplated.

It is sometimes argued that people's rain-baths cannot become popular in the United States, because in all large cities and even in the smaller towns dwelling-houses are rarely built without the convenience of a bath-room. This can hardly be considered a fair statement of the existing conditions. The actual facts in the case would appear to me to be as follows: It is true that the wealthy and the well-to-do classes have in their houses one or several bath-rooms, fitted up with more or less luxury, and the rich have, moreover, the many bathing establishments charging a high price of admission, which only people in comfortable circumstances can afford to pay. On the other hand, it must not be overlooked that even in the houses of the well-to-do people proper provision is rarely made for servants' baths. Again, the middle classes, who in New York City, for instance, are largely compelled to live in flats or apartment-houses (the higher-sounding name for improved tenement-houses), have, with rare exceptions, only a narrow, dark, and generally uninviting bath-room, and the mistake is, moreover, usually made by architects or builders of locating the water-closet almost invariably in the same room. But the poorer classes of our population, including mechanics, salesmen, clerks, etc., have rarely any bathing facilities whatever, and there are thousands of tenement-houses, especially in the densely populated districts of our large cities, which do not afford the convenience of a bath.

People's baths, therefore, would seem to me to be just as much needed here for health and cleanliness of the people as they are in Europe.

Rain-baths, however, are not merely suitable for public or people's bath-houses in populous districts. As their success in Europe has fully demonstrated, they are eminently adapted for many other classes of buildings, among which I will mention the following:

1. Institutions, such as general hospitals, hospitals for the insane, hospitals for infectious diseases, orphan asylums, prisons, institutions for feeble-minded children, for the blind, etc.

2. Gymnasiums, college buildings, and club-houses.

3. Public schools.

4. Factories and manufacturing establishments, breweries, central slaughter-houses or abattoirs, etc.

5. Military barracks and armories.

6. Hotels.

7. Railroad stations, for railroad employés, in particular for the engineers and firemen, and the clerks of the railway mail service.

8. Quarantine establishments.

9. On board of merchant steamships, ocean steamers, and men-of-war.

The general arrangement of rain-baths as well as the details of construction vary, each case being a problem in itself. For whatever purpose they may be constructed, the baths should be tidy and neat, kept scrupulously clean and inviting in appearance, and well ventilated, heated and lighted. It will suffice to mention briefly a few of the more important features.

The main bath-room is sometimes divided into a dressing-room and a separate room containing the douches, or else the dressing-rooms are arranged in a row on one side of the room, whereas the apartments containing the douches are placed on the opposite side. Such arrangement is preferred for schools, hospitals, and military barracks. In the case of people's baths it is preferred to combine the dressing-room and the bath proper, separating the two only by means of a waterproof curtain. Each bath is generally four feet wide and four feet deep, whereas the dressing-room is four feet wide, and from three to five feet deep. The floor of the bath may consist of concrete covered with a final coat of pure Portland cement, or else some artificial stone floor, such as is used for sidewalks, is laid. The floor may also consist of marble mosaic or vitrified tiling, or else of asphalt, which is more impervious to water than cement, and is more agreeable to the feet than a cement floor. The cement floor is often covered in the dressing-room with a removable sectional wooden lattice, or grid-iron-floor to keep the feet dry, but such wood soon rots and requires frequent renewal. In all cases the floor of the dressing-room should be graded toward the bath apartment.

In many rain-baths the floor of the bathing apartment is sunk or depressed, being moulded in concrete in the form of

a basin from four to six inches deep with rounded corners. In order to make the basin hold a few inches of water and thus answer for a foot-bath, the number of holes in the strainer over the waste is properly adjusted so that the water does not flow away as fast as delivered by the douche, or else a standing overflow with trumpet-shaped mouth is arranged.

It is not easy to decide what material is best adapted for the upright partitions or divisions between the bathing apartments. A non-absorbent material, such as opaque and non-transparent glass, marble, or slate would, of course, be best from a sanitary point of view, where economy is no object. The partitions may be covered with glazed tiles, and the walls may be tiled or faced with glazed or enamelled brick. Often the divisions are made of corrugated iron, galvanized, and afterward painted with special bath-enamel paint. The cheapest partitions are those of wood, if well filled and oil-painted, and such I find are used in many of the people's baths in Germany, although they are undoubtedly inferior in point of cleanliness and durability to marble or slate. Sometimes marble divisions are used for the bath compartment and wooden divisions, painted with English white enamel paint, for the dressing-rooms.

The partitions should not be less than seven feet in height, and it is advisable to keep the bottom of all partitions from ten to sixteen inches from the floor to facilitate cleaning operations, and to promote the circulation of air.

The douches are made either of copper or of spun brass, and may be finished either by tinning or by nickel-plating. Copper douches are somewhat cheaper than brass, but they should be made very strong and should have well-soldered joints where the pressure of water is heavy, otherwise it may happen that the facing will blow out. It is preferable to have the face of the douche fastened with screws or bolts, so as to have the same removable in case the holes become stopped up by impurities in the water. The number and size of the holes should be calculated and adjusted to the available water pressure, so that the douches will deliver from five to seven and one half gallons of water per minute. In order to be able to vary the angle of the descending stream it is best to fasten the douches to the supply-pipes by means of swivel joints.

In order to enable each bather to control the douche, a strong self-closing cock with combination lever, chain and pull is inserted in the branch supplying each douche, and a hook is provided to fasten the chain to, in order to leave both hands of the bather free. Such cocks or shut-offs may, however, be dispensed with whenever a bath attendant controls the bathing apparatus, as in schools, military barracks, and institutions.

The water-service pipes, which are generally carried exposed along the ceiling of the apartments, may be more or less complex in arrangement. Sometimes both hot and cold water-pipes are provided and carried to each bath compartment, in which case each of the latter requires a separate mixing-valve, generally fitted with a hot-water thermometer. As a rule, however, the warm water of a temperature suitable for bathing, and varying from 85° to 110° F., is mixed at a central apparatus, and carried and distributed to the douches by a single warm-water main. The best mean temperature of the warm water at the douche is about 100° F. Provision must be made by a large supply-pipe for an abundant supply of water.

Likewise should the waste-pipes from the bath be ample in size to carry off quickly all soiled water. The main drain should be laid with the greatest care, and wherever possible it is advisable to use a separate sewer for the bath-house where the same is located in a building having other plumbing work.

All plumbing should be durable and substantial, of the best of its kind, and perfect from a sanitary point of view. A good flushing-rim water-closet with flushing cistern, a well-flushed urinal, and a cleanly earthen or enamelled-iron slop-sink should always be provided. A hose sill-cock with rubber-lined hose, for flushing the floors and cleaning the bath-house generally, must not be forgotten.

Where a general waiting-room is provided, its floor should be tiled and provided with a safely trapped floor-drain with shut-off gate-valve.

The bath-house should be properly and comfortably heated and suitably ventilated. All bath compartments should be lighted by gas, or, better still, by incandescent electric lights.

The bathing compartments should be fitted with plain and substantial furniture, as follows: In the bath proper there

should be a perforated brass or galvanized-iron soap-cup, and sometimes a wooden foot-stool or a galvanized-iron seat, while the dressing-room should have a well-fastened hardwood seat, generally quarter-circle in shape, a number of enamelled-iron clothes-hooks, a towel-rack, a cuspidor, and an iron boot-jack.

It is doubtful whether it is proper to provide comb and hair-brush in each dressing-room, because by promiscuous use of these toilet articles diseases of the hair or scalp may be communicated from one person to another.

Mirrors in bathing compartments generally become covered with watery vapor, and are thus rendered practically useless, and it is quite sufficient to provide one large mirror in the main vestibule or hall of the bath-house.

The entrance from the waiting-room to the dressing-room should have a light wooden lattice door, cut off at bottom and at the top so as to admit of plenty of air for circulation. A door between the dressing-room and the bath-room proper is not needed; it generally suffices to put up a rubber curtain or a curtain of coarse cheese-cloth to prevent the splashing of the douche and the wetting of the clothes of the bather. It should be mentioned that physicians are opposed to the use of any curtain as being liable to take up and retain disease germs.

A question of prime importance in the construction and fitting up of "rain-baths" is the provision of a large quantity of warm water, and, at least in the case of public baths, their ultimate success may be said to hinge largely about this point.

In private houses an abundant supply of hot water for bathing is, as a rule, provided for by the water-back in the kitchen range in connection with the kitchen boiler or reservoir for hot water. But for all large bathing establishments special means for warming water are required, such as hot-water heaters with coal or gas fire, or else closed boiler-iron tanks heated by steam coils. Sometimes the water is heated by the direct admixture of steam, but this is a method not much to be commended.

Whatever the system may be, the warm-water apparatus to be successful should be simple, efficient, and reliable; there should be no unnecessary loss of heat, and the water for baths should never become over-heated and thereby expose the bather to the danger of scalding.

In nearly all cases where a larger number of rain-baths are fitted up, whether in bathing-houses, factories, institutions, schools, hotels, breweries or other buildings, a steam-boiler plant is erected in the building for heating or power purposes, and steam is therefore available for the generation of warm water in the form of either high or low-pressure steam, or else of exhaust steam. The ordinary hot-water tank, however, heated by a steam coil, is open to many objections, being unreliable and difficult to regulate, therefore wasteful in heat. The Tobey hot-water heater is constructed with a view of obviating this difficulty, and is, to some extent, successful. The ordinary hot-water tank has been fitted up with an automatic attachment regulating the supply of steam. Both devices are, however, expensive and somewhat complicated.

Quite recently a novel and ingenious form of apparatus for heating water by steam has been devised which promises to work very successfully. About this I hope to say something in the near future.—*American Architect, February 10th*, 1894.

CARBON DIOXIDE AS A MEASURE OF THE EFFICIENCY OF VENTILATION.

By E. H. Richards.

From the time of Hippocrates, who gave as the sanitary maxim "pure air, pure water, and pure soil," air has been placed first among the requirements of good sanitation. It is nevertheless a lamentable fact that, as Mr. Woodbridge has well expressed it, "the city which spends millions in water-works for pure water supply and for sewerage for foul water removal, is still found tightening its purse-strings when a few thousands are asked for to provide for pure air supply to and foul air discharge from its school-rooms."

The reason of this apathy is not far to seek. Chemists and sanitarians have seriously disagreed among themselves as to what constituted "bad air."

People live and apparently thrive among the most nauseous odors, while under more favorable conditions they sicken and die. One theorist has given a reason only to be forced to the wall by another quite as plausible. Between them the advo-

cate of pure air finds slight hearing. It is only within recent years that a knowledge of the significant fact that not to air itself, nor even to the bad odors it carries, but to the dust particles bearing living germs and spores is to be attributed the spread of disease; therefore filtered air, like filtered water, has become a necessity where dust cannot be avoided by scrupulous care.

And now, with our increased knowledge of the causes which lead to liability to disease, it seems probable that the chemist and sanitarian may at last unite in a winning fight for pure air. In a word, the new standpoint relates to the *resistance* which healthy blood and tissue present to the attacks of disease. This resistance is, we believe, due to the perfect nutrition of the blood corpuscles, and this is largely dependent on the inhalation of air containing sufficient oxygen.

In vitiated air the blood becomes quickly loaded with imperfectly oxidized products which cause derangement more or less serious and finally render the individual, who is poisoned from *within rather than from without*, more liable to succumb to disease.

If this view is in any measure correct, it is important that chemists combine to urge upon the community the importance of a sufficient supply of air, especially in school-rooms, and it is to be hoped that these views will command more respect than heretofore. It is notorious that even college halls and fine public buildings, which should be examples, are, in fact, the worst of any buildings.

The Laboratory of Sanitary Chemistry at the Massachusetts Institute of Technology has had, for the past nine years, exceptional opportunities for the study of the relation of the amount of carbon dioxide to the efficiency of the ventilation, in that the Walker Building is supplied with mechanical ventilation under the direction of an expert and in full control of the engineer, who has records for all these years of the amount and temperature of air supplied to each room, and of the temperature of these rooms taken four times each day.

During these nine years some five thousand determinations of the amount of carbon dioxide have been made in these rooms by some two hundred students.

Many problems have been studied and several reports published; without burdening this paper with details, to state a

few of the conclusions reached may stimulate others to add to our meagre knowledge on this subject.*

The outside air of the space around the Massachusetts Institute of Technology, Boston, varies from 3.7 to 4.2 parts carbon dioxide per 10,000.

The deterioration of the air as shown in the empty rooms is about 0.5 part, due to the decomposition of the organic matter present in the flues, the floors, and in the walls.

The air of the building in general, halls and drawing-rooms, reading-rooms, etc., which are open and in which people are constantly moving, is maintained at about five parts as an average of examinations during eight years. In the ninth year there has been an increase due to an increased number of lecture-rooms on the second floor.

The air of most of the lecture-rooms has contained from six to eight parts; of the larger crowded halls for two hundred or more students, ten to twelve parts according to weather, whether it is clear and dry and with a strong wind, or whether the air is loaded with moisture and is still.

From this experience it would seem that students can work well in a clean room with about seven parts per 10,000 of carbon dioxide; much more than this causes dulness, and anything over thirteen parts causes in most cases an almost impassable barrier to the full acquisition of knowledge.

When churches, halls, and lecture-rooms usually show from fourteen to eighteen parts per 10,000 in twenty minutes after the audience assembles, it is not strange that eloquence often fails to arouse enthusiasm.—*American Gas Light Journal, December 11th*, 1893.

* Papers relating to the points discussed, contributed in whole or in part from the Laboratory of Sanitary Chemistry:

"On the Determination of Organic Matter in Air," Thesis, by Marion Talbot, *Technology Quarterly*, 1, 1887–88.

"The Number and Distribution of Micro-organisms in the Air of the Boston City Hospital, with some Carbon Dioxide Determinations," by Greenleaf N. Tucker, in the Twentieth Annual Report of the State Board of Health of Massachusetts.

"A Critical Study of the Heating and Ventilation of the Walker Building, Massachusetts Institute of Technology," by S. H. Woodbridge, *Technology Quarterly*, 2, pp. 76, 192, 1888–89.

"The Determination of Carbon Dioxide in the Air of Buildings," by A. H. Gill, *Journal of Analytical and Applied Chemistry*, 6, 1892. This paper gives the method in detail which is used in the laboratory.

PERMANGANATE OF POTASSIUM AS AN ANTIDOTE FOR MORPHINE.

By WILLIAM MOOR, M.D., Physician to the West Side German Clinic; Member of the New York County Medical Association.

IN offering to the profession a new antidote for morphine it is not my desire to speak of a new, heretofore unknown or unused chemical body; on the contrary, the substance which forms the subject of these lines is one with which every physician and pharmacist is familiar. The term "new antidote" simply relates to the fact that the substance in question had not previously been used for the purpose of antagonizing or, rather, destroying morphine, for I don't know of a single instance in which permanganate of potassium—$Mn_2O_8K_2$—has been used as an antidote for morphine.

I have paid a good deal of attention to the therapeutics of permanganate of potassium during the past year, thinking that such a powerful destroyer of organic matter should be more utilized in the treatment of certain gastric disorders that are associated with putrid fermentation of the ingesta, also in cases of cancer of the stomach to suppress the fœtor of the breath, which renders patients a burden to their surroundings, and came to the conclusion that its mode of administration was at fault, inasmuch as no one likes to drink a purple, "poisonous" looking liquid, and, on the other hand, if given in pill form, it would act as a caustic upon a very small part of the glandular lining of the stomach, thus causing distress without any beneficial result. After some trials I found that the best way of administering it was to have it made up in pills with cacao butter and talcum or kaolin, and to direct the patient to drink very slowly a glassful of water just one minute after taking the pill, for the latter begins to disintegrate in one minute at the temperature of the body. By using this method I successfully combated the extremely disagreeable odor in a case of cancer of the stomach. About that time I treated a well-known actor suffering from acute pleurisy. This

gentleman was addicted to morphine, and as I had taken much interest in him, I earnestly sought the best plan to break his habit. The idea occurred to me that perhaps permanganate of potash might decompose morphine, the latter being an organic substance, and that by making use of a certain method I could eventually break this habit without restricting him from taking his morphine. My patient, however, started on a professional tour just when I began to put my idea to a test. This circumstance did not prevent me from continuing my researches as to the effect of permanganate of potassium on morphine, and to-day I am permitted to offer to the profession what I consider to be the antidote *par excellence* for morphine.

In the following remarks I shall give a brief outline of the experiments that led me to this conviction. Pouring a solution of one grain (0.06 gramme) of $Mn_2O_8K_2$ to one ounce of water (31 c.c.) into a solution of one grain of sulphate of morphine to one ounce of water, I noticed that this mixture did not for an instant assume the purple color of a $Mn_2O_8K_2$ solution, but at once formed a greenish liquid ; and that after a few moments a dark precipitate would sink to the bottom of the test-tube, leaving an almost colorless, tasteless liquid, in which the presence of morphine could not be detected. Knowing my great susceptibility to even very small doses of morphine, I could easily ascertain whether or not this colorless, tasteless liquid possessed any narcotic qualities. The road of safety being the best way, I began by taking a mixture of one sixth of a grain of sulphate of morphine and one ounce of a 1 to 2000 $Mn_2O_8K_2$ solution. Under ordinary circumstances one sixth of a grain of morphine has a profound narcotic effect on me, lasting for several hours ; I, therefore, rarely have taken for analgesic purposes more than one eighth of a grain. The above-mentioned mixture of one sixth of a grain of sulphate of morphine and one ounce of a 1 to 2000 $Mn_2O_8K_2$ solution produced no effect whatever on me. Gradually I increased the amount of morphine, and correspondingly the amount of permanganate of potassium, until I took two grains of the sulphate of morphine in one dose with the same amount of permanganate of potassium in solution. The results of these experiments, however, did not demonstrate that permanganate of potas-

sium was an antidote to morphine, as it was quite possible that it might be deoxidized by the organic matter of the buccal cavity, œsophagus, and stomach, chiefly by the contents of the stomach, before it could act on the morphine. To gain certitude on this point I conducted a series of experiments, a synopsis of which is as follows :

1. A 1 to 2000 solution of permanganate of potassium in water was held in the mouth for fully five minutes, when it still had a dark-red appearance, approaching the characteristic deep purple color of a $Mn_2O_8K_2$ solution, although the tongue and the gums have become brown.

2. If we dissolve one drachm (4 c.c.) of the white of egg in one ounce (31 c.c.) of water, and to this add one drachm of a 1 to 250 solution of permanganate of potassium in water (one fourth grain of $Mn_2O_8K_2$), the mixture will for a moment have a purplish color, and after stirring it for one minute will be of a reddish-brown color, and have a distinct taste of permanganate of potassium. After five minutes, on filling two test-tubes with this mixture and adding to one of them a small quantity of sulphate of morphine—this latter being an energetic deoxidizer of $Mn_2O_8K_2$—but adding nothing to the mixture in the other test-tube, the former mixture will at once become of a much lighter color (light amber) than the one without morphine. Even after thirty minutes this differentiation can be effected. Thus we see that it takes one drachm of the white of egg at least thirty minutes to completely deoxidize one quarter of a grain of the permanganate. Now, I found that one quarter of a grain of permanganate will be deoxidized by exactly the same amount of sulphate of morphine in one second—for the sake of convenient calculation one moment may be considered as one second—therefore one drachm of sulphate of morphine deoxidizes one quarter of a grain of the permanganate at least seventy-two thousand times quicker than a drachm of albumen would do it, assuming that the latter could accomplish it in five minutes. But as we saw that the deoxidization was not complete after the elapse of half an hour, we are justified in saying that the chemical reaction between the permanganate and the salt of morphine is infinitely more rapid that the one between the former and the white of egg.

3. By substituting for the albumin one drachm of peptone, in the experiment just related, we find that one grain of $Mn_2O_8K_2$ is not completely deoxidized by one drachm of peptone in five minutes. Calculating in the same manner as before we come to the conclusion that the rapidity of reaction between the permanganate and the salt of morphine is at least eighteen thousand times greater than the one between the former and peptone.

Having gained the knowledge of these facts it is not surprising that I could swallow with impunity toxic doses of sulphate of morphine followed in a few moments by a corresponding amount of the chemical body which I was justified to consider the antidote *par excellence* for morphine. Thus, on one occasion, four hours after a full dinner, at a time when the stomach must have contained a great amount of soluble peptones and other organic matter, I took two grains of the sulphate of morphine in about half of an ounce of water, followed in one minute by three grains of its antidote—for safety's sake one grain more than necessary—dissolved in four ounces of water. In another instance, on January 9th of this year, three hours after a light supper, I took, in the presence of several colleagues belonging to the staff of the West Side German Clinic of this city, three grains of sulphate of morphine, followed in about thirty seconds by four grains of permanganate of potassium, both in aqueous solution. I was perfectly confident that the antidote possessed such a wonderful affinity for the morphine that it would select it instantaneously from among the contents of the stomach, and thus render harmless what might have easily been a fatal quantity to one so susceptible as I am to even very small doses of this alkaloid. A striking demonstration of the astonishing selective faculty of $Mn_2O_8K_2$ for morphine can be shown by mixing two hundred and fifty grains of the white of egg with one ounce of water, dissolving in this mixture one grain of sulphate of morphine and adding to the whole just one grain of the permanganate dissolved in one ounce of water. After thoroughly mixing not a trace of morphine can be detected ; which conclusively proves that the molecules of the antidote instantaneously selected the molecules of morphine without being interfered with by the albumin, though the quantity of the latter so greatly exceeded the quantity of morphine.

The question arises, What becomes of $Mn_2O_8K_2$ and $C_{17}H_{19}NO_3 + H_2O$ (morphine) after they have reacted upon each other? While it is easy to determine that the permanganate is deoxidized by the morphine with formation of manganese binoxide—MnO_2—manganate of potassium—$MnKO_4$—and potassium hydroxide—KHO—thus leaving O_2 for the oxidation of morphine, this latter undergoes changes, the nature of which I have not yet been able to determine, but hope to be able to do so in the near future.

In case of poisoning by any of the salts of morphia, ten or fifteen grains of the antidote dissolved in six or eight ounces of water should be administered at once and repeated at intervals of thirty minutes three or four times, or even more often. Permanganate of potassium, as wall as the salts of manganese, are comparatively harmless even if given in large quantities. I have poured into the stomach of a rabbit weighing four pounds a solution of five grains of $Mn_2O_8K_2$ in two ounces of water, and one hour later two grains more dissolved in one ounce of water, without noticing any toxic effects whatever. One ounce of the sulphate of manganous oxide has caused only brisk catharsis (Dr. Thompson).

In cases of poisoning by the alkaloid itself or by tincture of opium (laudanum), also by opium, it is advisable to acidulate the antidotal solution with diluted sulphuric acid, or in the absence of this with some white vinegar (not red vinegar), by which the insoluble morphia will be at once converted into the soluble sulphate or acetate.

I have strong reason to believe that the administration of permanganate will be of beneficial effect even after absorption of the morphine has taken place. This statement I base on the following:

Professor Edward Hitzig,* of Halle, two years ago, proved beyond a doubt that morphine which was injected subcutaneously into dogs was secreted by the glandular lining of the stomach. Hitzig succeeded, by washing out the stomachs of animals that had received morphine subcutaneously, in obtaining fully one half of the injected amount during the first hour after the injection. It is therefore a logical neces-

* *Berliner Klinische Wochenschrift*, No. 49, 1892.

sity that an antidote which acts instantaneously must destroy in the stomach a certain amount of poison that got into the circulation either through hypodermatic injection or through absorption by the stomach, for it is evident that the same circulation which conveys a poison from the peripheral parts of the body to the stomach, must also bring back to the latter a part of the poison which previously was absorbed by it. I intend to carry out a series of experiments upon animals to prove this conclusion; for the present I just state that some experiments for this purpose upon rabbits have been highly encouraging. As to the effect of permanganate of potassium upon other alkaloids, I shall briefly enumerate the results I have obtained.

Atropine.—One grain of sulphate of atropine dissolved in one ounce of water added to one grain of permanganate of potassium in half an ounce of water. Color, purple, as if the solution contained only permanganate of potassium. After four hours, color still purple, no change from original permanganate color; one drop instilled into a person's eyes widely dilates the pupils in a few moments; midriasis lasting over twenty-four hours. After eight hours, color dark red, taste intensely bitter; addition of sulphate of morphine gives the characteristic reaction (dark precipitate, colorless liquid above it). After twenty hours, color dark brown, taste intensely bitter; addition of morphine gives the characteristic reaction. Thus permanganate of potassium has practically no effect upon atropine.

Cocaine.—One grain of cocaine muriat. to one ounce of water added to one grain of permanganate of potassium in half an ounce of water. Color, purple, as if the solution contained only $Mn_2O_8K_2$.

Four hours later, color dark red, taste intensely bitter; one drop instilled into a person's eye causes decided midriasis lasting half an hour; addition of morphine gives the characteristic reaction. Eight hours later, color grayish red, taste bitter; applied to the pharynx distinct difficulty in swallowing noticeable; dark precipitate on the addition of morphine.

Practically no effect on cocaine.

Veratrine.—Two grains of veratrine muriat. to half an ounce of water added to two grains of permanganate of potassium in

one ounce of water. Color, purple. Ten minutes later, purplish red. Fifteen minutes later, dark brown ; precipitate on addition of acetate of morphine. Thirty-five minutes later, precipitate with brownish liquid above, the latter turning light on the addition of acetate of morphine, and if applied to the nasal mucous membrane causing violent sneezing (one of the characteristics of veratrine). Useless in veratrine poisoning.

Pilocarpine.—Two grains of pilocarpine muriat. to two ounces of water added to two grains of permanganate of potassium in one ounce of water. Color, purple ; after five minutes, still purple ; after forty minutes, carmine.

After seventy minutes, color carmine ; one drachm injected subcutaneously into a rabbit causes lachrymation, salivation, profuse perspiration, irregular, rapid breathing (160), three or four copious watery discharges.

After three hours, color still red ; addition of morphine gives the usual reaction. Practically without effect on pilocarpine.

Aconitia.—Two grains of aconitine to two ounces of water + two grains of permanganate of potassium to one ounce of water. Color, purple. After stirring for two minutes, same color.

After two hours, color unchanged ; half a drachm (2 c.c.) injected into a full-grown rabbit ; animal restless in a few moments, turns his head to the side, makes rapid swallowing motions, salivates, is evidently nauseated ; difficult, irregular breathing, tremor, opisthotonos ; animal lies on its side, apparently *in extremis*, but after ninety minutes symptoms begin to abate.

After twenty-four hours, color still reddish purple. Dark precipitate by addition of morphine. No effect on aconitine.

Strychnine.—One grain of strychn. sulphat. to one ounce of water + one grain of permanganate of potassium to half an ounce of water. Color, purple ; after five minutes, red ; after fifteen minutes, dark brown, intensely bitter ; after thirty minutes, same color, taste intensely bitter. Addition of morphine, black precipitate, colorless liquid above.

Could not be depended upon in strychnine poisoning, if the stomach should contain organic matter, which is the rule.

I now submit this paper to the unprejudiced criticism of the

profession, and hope that my *confrères* will aid me in developing the ideas laid down in it. If my humble efforts should result in saving human lives, I should feel amply rewarded.—*Medical Record.*

A RECENT POISON CASE.*

By WILLIAM P. MASON, Rensselaer Polytechnic Institute.

A NUMBER of interesting points, bearing upon the chemico-legal side of arsenical poisoning, having arisen during a recent trial with which the writer was connected as expert, the following is given as a brief report of the case.

The deceased, a farmer, bachelor, sixty-five years of age, and in good health, was taken violently sick shortly after breakfast, with vomiting and distress in the stomach. Although a physician was summoned, the symptoms increased in severity, and a little after midnight death ensued. The funeral took place three days later. Certain very damaging pieces of circumstantial evidence having been collected, the housekeeper was arrested on the charge of murder, it having been shown, among other things, that on the day preceding the death she had purchased an ounce of white arsenic.

Thirty-five days after death (from March 20th to April 25th), the body was exhumed, and found in a state of remarkable preservation, and free from cadaveric smell. The stomach presented evidences of inflammation.

Those portions sent to this laboratory for examination were the stomach, portion of intestine, portion of liver, one kidney, and the heart. Arsenic was found in all these parts. White octahedral crystals were found in the contents of the stomach, which on separation gave arsenical reaction.

The methods of testing for the arsenic found in the various tissues were the Marsh and Reinsch, with the usual precautions, checks, and modifications.

* Reprinted from the *Journal of Analytical and Applied Chemistry*, Vol. XV., No. 6, June, 1893.

The arsenic as found was :

	Gram.
Stomach and intestine	0.2376
Liver and kidney	0.0032
Heart	0.0007
Total as metallic arsenic	0.2415

This would correspond to 4.91 grains of white arsenic.

These weighings having been of tube deposits of metallic arsenic derived from the Marsh test, they did not represent all the arsenic present in the tissue, there having been unavoidable loss. Allowance having been made for such loss, the estimated amount of white arsenic present was six grains.

The amount of arsenic recovered and produced in court was, however, in quantity sufficient to produce death. Some time after the analytical report was made to the coroner, it was learned that an embalming fluid, highly arsenical in character, had been used upon the body by the undertaker at the time of preparation for burial. It is important to note that no injection of this embalming fluid was practised, but that cloths wrung out in the fluid were laid upon the face and chest and were kept constantly wet therewith during a period of many hours. In all about two quarts of embalming fluid were so used. Its composition appeared to be a strongly acidified solution of sodium arsenite and zinc sulphate. Only the arsenic and zinc were determined quantitatively, and they were found to be, zinc (metallic) 1.978 per cent and arsenic (metallic) 1.365 per cent by weight. An amount of this fluid measuring 15.7 cc. would thus contain a weight of arsenic equal to that actually recovered from the body.

Extended medical testimony was offered by the people tending to show that, under the given circumstances, no fluid of any kind could have reached the stomach through the nose or mouth after death, thus anticipating what the defence afterward claimed, that the undertaker was responsible for the arsenic discovered in the remains.

In order to gather further light upon the possibility of cadaveric imbibition of embalming fluid through the unbroken skin, test was made for zinc in the heart and stomach, and greatly to my surprise distinct traces of the metal were found in each

instance. That at least a portion of the arsenic found in the body was due to post-mortem causes was thus distinctly proven. A weighed portion (62 grams) of the stomach and contents was then most carefully analyzed quantitatively for both zinc and arsenic with the following results: Arsenic, 0.0648 gram, and zinc, 0.0079 gram. Bearing in mind the relative quantities of the two metals in the embalming fluid, it will be seen that the arsenic found in the 62 grams of the stomach was nearly twelve times larger than it should have been to have balanced the zinc which was also present. This fact, together with the discovery of crystals of white arsenic in the stomach, constituted the people's case so far as the chemical evidence was concerned.

The defence made an unsuccessful effort to show that the crystals of the tri-oxide originated from the spontaneous evaporation of the embalming fluid. The people met this point by proving that such fluid had been abundantly experimented upon by exposure to a very low temperature during an interval of several months, and also by spontaneous evaporation with a view of testing that very question, and that the results had in every case been negative. Special importance was given these experiments because of the well-known separation of octahedral crystals during the spontaneous evaporation of a hydrochloric acid solution of the white oxide, it having also appeared that, in the manufacture of the embalming fluid, the arsenic was used as white arsenic.

A very strong point was finally raised for the defence by the inability of the people's expert to state positively whether or not an embalming fluid of the above composition would diffuse as a whole through dead tissue, or its several parts would be imbibed at different rates of speed, the zinc portion becoming arrested by albuminoid material and being therefore outstripped by the arsenic, or *vice versa.* Experimental evidence upon this topic is entirely wanting, for although an investigation touching upon this subject was instituted in this laboratory, the results are not in such shape as to permit of their use in so important a case as a trial involving life. The first trial resulted in a failure of the jury to agree, and the second in an acquittal of the prisoner.

SANITARY TOPOGRAPHY AND MINERAL SPRINGS OF WEST VIRGINIA.

By A. N. Bell, A.M., M.D.

West Virginia lies between the parallels of 37° and 40° north latitude, and 80°–82° longitude west.

The mean annual temperature of the State, as deduced from forty years' observations on the central parallel, is 52° 46′. The warm season is long, but the heat is not intense.

It is bounded on the north by Pennsylvania and Maryland, on the east by Maryland and Virginia, on the south by Virginia, and on the west by Kentucky and Ohio, and includes a portion of the Appalachian Valley, the western slope of the Appalachian range, and a part of the upper valley of the flat-topped and gently undulating planes. This region slopes moderately to the Ohio River, where the elevation above tide water extending along the banks ranges from 550 to 700 feet. It is drained by many streams, including the Little Kanawha, the Great Kanawha, the Guyandotte, the Big Sandy and its eastern branch, the Tug Fork.

In the vicinity of the Ohio River the hills are of moderate height with gentle slopes, and placed more or less widely apart, and have extensive bottoms along the river. Near Charleston the hills become higher and higher, with precipitous slopes and narrow valleys. The beds of the streams are rugged and choked with great masses of stone, fallen from the mountains above, while continual rapids and falls combine to give them still more of the character of mountain torrents. Such conformation has given to New River its well-known reputation for wildness and ruggedness, but in these features it is even surpassed by its southern neighbors, the Guyandotte and Big Sandy. The scenery presented along the banks of the streams is wild and picturesque. With this region there are numerous and rich beds of bituminous coal and immense extent of saline formation.

The chain of mountains extending in a southwesterly direction along the boundary between West Virginia and

Virginia is of peculiar structure, possessing anthracite and bituminous coal, limestone, sandstone, and iron ores. Soft shales and clay slates overlie the sandstone in the region included within the greater part of this mountainous district, especially in Greenbrier and Monroe counties. They are the normal deposits for mineral springs from the amount of iron pyrites, carbonaceous and other salts which they contain, as well as from their contorted and broken condition, and further, as might be inferred from the general geological character of West Virginia, and especially from the chemical character of her abundant mineral wealth, numerous mineral waters are found to exist in the State, many of which have been fully tested for many years, and are equal to any other waters of their class in the world. West Virginia comprises within her southern and southeastern border a large portion of the celebrated mineral spring plaza, long known as the " spring region of Virginia," and which for the past hundred years has been resorted to by health and pleasure-seekers of every section of the United States. The widely known White Sulphur Springs are located in Greenbrier County.

SPRING HOUSE.

Sulphuretted.

Greenbrier White Sulphur Springs, White Sulphur Springs, Greenbrier County.

No. 1. A. A. Hayes, analyst (1842).

Calcium carbonate,	grains per gallon	.....	7.07
Calcium sulphate,	" "	.....	78.35
Magnesium sulphate,	" "	.....	35.42
Silicates,	" "	.....	3.46
Magnesium chloride,	" "	.....	1.00
Organic matter,	" "	.....	4.36
Total	" "	.....	129.66

Gases.

Carbonic acid,	cubic inches	.....	11.28
Sulphuretted hydrogen,	" "	.....	0.24
Oxygen,	" "	.....	0.48
Nitrogen,	" "	.....	4.64

The waters of the White Sulphur Springs are copious, but accompanied by very little evolved gas.

Calcareous.

No. 2. W. B. Rogers, analyst.

Calcium carbonate,	grains per gallon	.....	3.53
Magnesium carbonate,	" "	.....	1.17
Sodium sulphate,	" "	.....	9.35
Calcium sulphate,	" "	.....	73.19
Magnesium sulphate,	" "	.....	19.03
Aluminium sulphate,	" "	.....	0.02
Iron protosulphate,	" "	.....	0.15
Earthy phosphates,	" "	.....	trace.
Sodium chloride,	" "	.....	0.52
Calcium chloride,	" "	.....	0.02
Magnesium chloride,	" "	.....	0.16
Iodine,	" "	.....	undetermined.
Organic matter,	" "	.....	0.01
Total	" "	.....	107.15

Gases.

Carbonic acid,	cubic inches	8.48
Sulphuretted hydrogen,	" "	2 96
Oxygen,	" "	0.40
Nitrogen,	" "	4.32

No. 3. W. B. Rogers, analyst.

Magnesia,	grains per gallon	trace.
Lime,	" "	5.65
Iron protoxide,	" "	12.12
Alumina,	" "	16.20
Sulphuric acid,	" "	48.83
Total	" "	82.80

Calcic.

Berkeley Springs, Berkeley Springs, Morgan County. A. A. Hayes, analyst (1855)

Calcium carbonate,	grains per gallon	5.00
Magnesium sulphate,	" "	0.36
Calcium silicate,	" "	0.64
Calcium crenate,	" "	3.64
Iron crenate,	" "	0.08
Sodium chloride,	" "	0.89
Calcium chloride,	" "	0.21
Loss,	" "	0.06
Total	" "	10.88

Gases.

Carbonic acid,	cubic inches	19.00
Oxygen,	" "	16.60
Nitrogen,	" "	64.30

Sulphuretted.

Blue Sulphur Springs, Blue Sulphur Springs, Greenbrier County.

Calcium carbonate,	grains per gallon	5.05
Magnesium carbonate,	" "	0.94
Sodium sulphate,	" "	16.22

Calcium sulphate,	grains per gallon	.....	46.55
Magnesium sulphate,	" "	.....	6.38
Earthy phosphate,	" "	.....	trace.
Sodium chloride,	" "	.....	4.21
Calcium chloride,	" "	.....	0.01
Iron protoxide,	" "	.....	0.03
Iodine,	" "	.....	trace.
Organic matter,	" "	.....	6.93
Total	" "	.....	86.32

Gases.

Carbonic acid,	cubic inches	.....	5.35
Sulphuretted hydrogen,	" "	.....	1.03
Oxygen,	" "	.....	1.29
Nitrogen,	" "	.....	7.49

Alkaline, Saline, Sulphuretted.

Borland Mineral Well, Borland, Pleasants County. T. G. Wormley, analyst.

Sodium carbonate,	grains per gallon	.....	77.80
Calcium carbonate,	" "	.....	8.75
Magnesium carbonate,	" "	.....	1.86
Iron carbonate, Aluminium carbonate,	" "	.....	0.64
Sodium sulphate,	" "	.....	37.87
Potassium sulphate,	" "	.....	22.62
Aluminium phosphate,	" "	.....	0.23
Sodium chloride,	" "	.....	240.07
Magnesium chloride,	" "	.....	2.14
Magnesium bromide,	" "	.....	0.28
Magnesium iodide,	" "	.....	0.02
Manganese,	" "	.....	trace.
Silica,	" "	.....	0.59
Organic matter,	" "	.....	trace.
Total	" "	.....	392.87

Alkaline Carbonated.

Capon Springs, Capon Springs, Hampshire County. J. W. Mallet, analyst, Main Spring.

Sodium carbonate,	grains per gallon	.....	0.59
Calcium carbonate,	"	"	8.33
Magnesium carbonate,	"	"	1.44
Lithium carbonate,	"	"	trace.
Manganese carbonate,	"	"	trace.
Iron carbonate,	"	"	0.04
Calcium sulphate,	"	"	0.59
Potassium sulphate,	"	"	0.17
Strontium sulphate,	"	"	trace.
Nitrates,	"	"	trace.
Calcium phosphates,	"	"	trace.
Sodium chloride,	"	"	0.06
Calcium fluoride,	"	"	trace.
Alumina,	"	"	0.02
Silica,	"	"	0.70
Organic matter,	"	"	0.20
Total	"	"	12.14

Gases.

Carbonic acid,	cubic inches	.....	8.56
Oxygen,	"	"	1.76
Nitrogen,	"	"	3.68

Beauty Spring (Capon Springs). J. W. Mallet, analyst.

Sodium carbonate,	grains per gallon	.....	0.63
Calcium carbonate,	"	"	8.36
Magnesium carbonate,	"	"	1.27
Lithium carbonate,	"	"	trace.
Manganese carbonate,	"	"	trace.
Iron carbonate,	"	"	0.05
Copper carbonate,	"	"	trace.
Calcium sulphate,	"	"	0.41
Potassium sulphate,	"	"	0.16
Strontium sulphate,	"	"	trace.
Nitrates,	"	"	trace.
Calcium phosphate,	"	"	trace.
Sodium chloride,	"	"	0.05
Calcium chloride,	"	"	trace.
Calcium fluoride,	"	"	trace.

Alumina,	grains per gallon	0.02
Silica,	" "	0.67
Organic matter,	" "	0.19
Total	" "	11.81

Gases.

Carbonic acid,	cubic inches	7.76
Oxygen,	" "	1.68
Nitrogen,	" "	3.68

Saline, Sulphuretted.

Grey Sulphur Springs, Peterstown, Monroe County. W. B. Rogers, Analyst. Aperient Spring.

Sodium carbonate,	grains in 100 cubic inches	1.75
Calcium carbonate,	" " "	2.07
Magnesium carbonate,	" " "	2.46
Ammonium carbonate,	" " "	trace.
Sodium sulphate,	" " "	0.36
Sodium chloride,	" " "	0.34
Potassium chloride,	" " "	trace.
Iron peroxide,	" " "	0.09
Silica,	" " "	0.75
Organic matter,		large amount.
Total	" " "	7.82

Gases.

Carbonic acid,	cubic inches	6.18
Sulphuretted hydrogen,	" "	0.41
Oxygen,	" "	0.40
Nitrogen,	" "	3.00

Anti-Dyspeptic Spring.

No. 1. W. B. Rogers, analyst.

Sodium carbonate,	grains in 100 cubic inches	2.46
Calcium carbonate	" " "	2.84
Magnesium carbonate,	" " "	1.68
Ammonium carbonate,	" " "	trace.

Sodium sulphate,	grains in 100 cubic inches		.....	0.43
Sodium chloride,	"	"	.....	0.21
Potassium chloride,	"	"	.....	trace.
Iron peroxide,	"	"	.....	0.05
Silica,	"	"	.....	0.32
Organic matter,	"	"	..large amount.	
Total	"	"	.....	7.99

Gases.

Carbonic acid,	cubic inches		.....	6.54
Sulphuretted hydrogen,	"	"	.....	0.20
Oxygen,	"	"	.....	0.40
Nitrogen,	"	"	.....	3.07

Anti-Dyspeptic Spring.

No. 2. C. U. Shepard, analyst (1835).

Sodium carbonate,	parts in 100 +		.....	50.00
Calcium carbonate,	"	"	.....	38.90
Magnesium carbonate,	"	"	.....	8.10
Calcium sulphate,	"	"	.....	trace.
Magnesium sulphate,	"	"	.....	trace.
Sodium chloride,	"	"	.....	trace.
Iron oxide,	"	"	.....	trace.
Silica,	"	"	.....	3.60
Total	"	"	.....	100.60

Alkaline Saline.

Hart Well, near Willow Island, Pleasants County. S. C. Wells, analyst.

Sodium carbonate,	grains per gallon	.....	78.86
Calcium carbonate,	"	.....	8.86
Magnesium carbonate,	"	.....	1.86
Iron carbonate (with cobalt and nitric acid),	"	.....	0.70
Sodium sulphate,	"	.....	38.38
Potassium sulphate,	"	.....	22.92

Aluminium phosphate,	grains per gallon.....	0.23
Sodium chloride,	" "	243 59
Magnesium chloride,	" "	2.16
Magnesium bromide,	" "	0.28
Magnesium iodide,	" "	0.02
Manganese,	" "	0.07
Silica,	" "	0.58
Organic matter,	" "	trace.
Total	" "	398.53

Indifferent.

Howard's Lick, Howard's Lick, Hardy County. W. B. Rogers, analyst.

Sodium carbonate,	grains in 200 cubic inches.....	5.33
Calcium carbonate,	" " "	0.44
Magnesium carbonate,	" " "	0.20
Sodium sulphate,	" " "	0.19
Sodium chloride,	" " "	0.46
Iron peroxide,	" " "	0.12
Silica,	" " "	0.37
Organic matter,	" " "	trace.
Total	" " "	7.11

Humphrey's Spring, between Salt Sulphur and Red Sulphur Springs, Monroe County. W. B. Rogers, analyst.

Calcium carbonate,	grains in 100 cubic inches.....	6.38
Magnesium carbonate,	" " "	1.01
Sodium sulphate,	" " "	15.54
Calcium sulphate,	" " "	8.73
Magnesium sulphate,	" " "	4.23
Sodium chloride,	" " "	2.73
Magnesium chloride,	" " "	1.61
Iron protoxide,	" " "	trace.
Iodine (with sodium),	" " "	trace.
Organic matter (with sulphur),	" "	much.
Total grains	" "	40.23

Calcic Saline.

Irondale Spring, Irondale Furnace, Independence, Preston County. Professor Breneman, analyst.

Calcium sulphate,	grains per gallon	.....	60.42
Magnesium sulphate,	" "	.....	4.34
Potassium sulphate,	" "	.....	6.76
Aluminium sulphate,	" "	.....	11.34
Manganese sulphate	" "	.....	2.86
Iron sulphate (with cobalt and nitric acid)	" "	.....	trace.
Sodium chloride,	" "	.....	1.36
Silica,	" "	.....	1.44
Iodine (with sodium),	" "	.....	trace.
Vegetable and volatile substance,	" "	.....	8.24
Total	" "	.....	96.76

Saline Carbonated.

Parkersburg Mineral Wells, six miles south of Parkersburg, Wood County. S. F. Berney, analyst.

Sodium carbonate,	grains per gallon	.....	4.00
Sodium sulphate,	" "	.....	24.00
Magnesium sulphate,	" "	.....	10.00
Iron sulphate,	" "	.....	4.00
Sodium chloride,	" "	.....	41.00
Iodine,	" "	.....	1.00
Total	" "	.....	84.00

Gases.

Carbonic acid, cubic inches	16.00

Calcic, Saline.

Magnesia Spring, near White Sulphur Springs, Greenbrier County. William E. A. Aiken, analyst.

Calcium carbonate,	grains per imp. gallon	.....	22.37
Magnesium carbonate,	" " "	.....	11.16
Iron carbonate,	" " "	.....	0.32
Sodium sulphate,	" " "	.....	1.20

Calcium sulphate,	grains per imp. gallon.....	20.01
Magnesium sulphate,	" " "	12.06
Potassium sulphate,	" " "	1.46
Manganese sulphate,	" " "	0.18
Sodium chloride,	" " "	1.26
Potassium chloride,	" " "	1.74
Lithia,	" " "	trace.
Iron peroxide,	" " "	0.43
Silica,	" " "	0.86
Iodine,	" " "	trace.
Bromine,	" " "	trace.
Organic matter,	" " "	trace.
Total	" " "	74.05

Sulphuretted.

Salt Sulphur Springs, Salt Sulphur Springs, Monroe County.

No. 1. Old Spring. W. B. Rogers, analyst.

Calcium carbonate,	grains per gallon.....	10.26
Magnesium carbonate,	" "	3.31
Sodium sulphate,	" "	22.36
Calcium sulphate,	" "	84.90
Magnesium sulphate,	" "	18.21
Earthy phosphates,	" "	trace.
Sodium chloride,	" "	1.58
Calcium chloride,	" "	0.06
Magnesium chloride,	" "	0.26
Iron peroxide,	" "	0.10
Iodine,	" "	trace.
Organic matter,	" "	9.24
Total	" "	150.28

Gases.

Carbonic acid,	cubic inches.....	13.28
Sulphuretted hydrogen,	" "	3.44

No. 2. Iodine Spring. D. Stewart, analyst.

Sodium carbonate,	grains per gallon.....	10.80
Calcium carbonate,	" "	33.00

Magnesium carbonate,	grains	per gallon	7.00
Potassium carbonate,	"	"	2.33
Sodium sulphate,	"	"	24.00
Calcium sulphate,	"	"	68.00
Magnesium sulphate,	"	"	20.00
Earthy phosphates,	"	"	0.73
Sodium chloride,	"	"	1.50
Calcium chloride,	"	"	0.56
Magnesium chloride,	"	"	0.28
Iron peroxide,	"	"	1.06
Alumina,	"	"	0.18
Silica,	"	"	1.76
Iodine,	"	"	0.63
Bromine,	"	"	0.65
Total	"	"	172.48

Gases.

Carbonic acid,	cubic	inches	34.56
Sulphuretted hydrogen,	"	"	19.12

Saline Chalybeate.

Shannondale Springs, five and one half miles from Charlestown, Jefferson County. De Butts, analyst.

Calcium carbonate,	grains	in 100	grains	of solid contents	10.5
Iron carbonate,	"	"	"	"	0.7
Calcium sulphate,	"	"	"	"	63.0
Magnesium sulphate,	"	"	"	"	23.5
Iron sulphate,	"	"	"	"	0.3
Sodium chloride,	"	"	"	"	1.0
Magnesium chloride,	"	"	"	"	1.0
Total	"	"	"	"	100.00

Gases undetermined.

Sulphuretted.

Red Sulphur Springs, Red Sulphur Springs, Monroe County. A. A. Hayes, analyst (1842).

Calcium carbonate,	grains per gallon	.....	5.25
Magnesium carbonate,	" "	.....	4.81
Sodium sulphate,	" "	.....	4.14
Earthy phosphate,	" "	.....	0.82
Organic matter (with sulphur),	" "	.....	8.39
Total	" "	.....	23.96

Gases.

Carbonic acid	cubic inches	.....	8.00
Sulphuretted hydrogen,	" "	.....	1.04

Calcic.

"Sweet Chalybeate Springs," Sweet Springs, Monroe County. W. B. Rogers, analyst.

Calcium carbonate,	grains per gallon	.....	30.06
Magnesium carbonate,	" "	.....	0.82
Sodium sulphate,	" "	.....	6.34
Calcium sulphate,	" "	.....	13.17
Magnesium sulphate,	" "	.....	9.39
Earthy phosphates,	" "	.....	trace.
Sodium chloride,	" "	.....	0.14
Calcium chloride,	" "	.....	0.14
Magnesium chloride,	" "	.....	0.31
Iron peroxide,	" "	.....	0.14
Silica,	" "	.....	0.17
Iodine,	" "	.....	trace.
Total	" "	.....	60.68

Gases.

Carbonic acid,	cubic inches	88.00

Sulphuretted.

Bluish-white Sulphur Spring, Edray, Pocahontas County.

Floding Springs (Blue Sulphur Springs), Floding Springs, Cabell County.

Green Sulphur Springs, Green Sulphur Springs, Summers County.

Guinn's Spring, near mouth of Lick Creek, Fayette County.

Hardy White Sulphur Springs, 14 miles south of Moorefield, Hardy County.

Orrick's Sulphur Spring, four miles from Berkeley Springs, Morgan County.

Chalybeate.

Chalybeate Springs.

No. 1. Near Fayette Station, Fayette County.

No. 2. Near Edray, Pocahontas County.

No. 3. Near Brandywine, Pendleton County.

Spa Spring, one and one half miles from Berkeley Springs, Morgan County.

Saline.

Kanawha Saline Spring, Kanawha Valley.

Saline, Sulphuretted.

Webster Salt Sulphur Springs, Webster Court-House, Webster County.

Character of the water undetermined.

Alum Spring, one mile from Little Sewell Mountain, Greenbrier County.

Aurora Highlands Spring, Aurora, Preston County.

Barger's Springs, Barger's Springs, Summers County.

Columbia Sulphur Spring, Columbia Sulphur Springs, Greenbrier County.

Crimson Springs, Crimson Springs, Monroe County.

Mechem's Spring, two miles from Berkeley Springs, Morgan County.

Mineral Springs, near Clarksburg, Harrison County.

Mineral Well, Millhouse Ridge, near Muse's Bottom, Jackson County.

Sharpnack's Well (650 feet), Petroleum, Ritchie County.

Three *sulphur springs* (so called) near Blue Sulphur Springs, Greenbrier County.

Triplett Springs, Willow Island, Pleasants County.

THE SALOON A NUISANCE.

THE late decision of the Supreme Court of Indiana, declaring the saloon a nuisance, the full text of which has been published in pamphlet form by the National Temperance Society, is a judicial deliverance of profound importance. The legal principles affirmed by the Indiana judges, if sound, are of general application, and there appears to be no good reason why they should not be similarly interpreted by the Supreme Courts of other States, whenever like test cases may be brought before them.

In the Indiana case the owner of a building in the residence portion of Indianapolis rented it to a man, for about double the ordinary rental price, for the purpose of opening therein a saloon. License was applied for and granted, despite the protests of the adjacent property owners and residents. The owners of an adjoining house and lot, two women, brought a suit for damages, on the ground of injury to their property, for both sale and rental purposes. The defence claimed that the saloon was licensed according to law; that it was not, in any legal sense, a disorderly house, and that if the neighboring property was damaged by its presence the saloon was not legally amenable therefor. The lower court, and also the Supreme Court, upon the first trial of the case, found for the defendant. A rehearing in the Supreme Court was secured by the counsel for the prosecution, Colonel E. F. Ritter, of Indianapolis. The whole matter was reviewed and reargued, with great thoroughness and ability, by Colonel Ritter, and with the gratifying result that the Supreme Court reversed its former decision. The complaint affirmed that the premises adjoining the saloon, which before it was opened would have rented for $35 a month, would not, while the saloon was continued, rent for more than $20 a month, and that the said premises, which would have readily sold for $5500, would not, with the saloon adjoining, sell for more than $3000.

The court holds to the constitutional right of the Legislature to license saloons, but maintains that it is not competent for the Legislature to authorize an obvious injury to the property of the citizen, unless in a case of great public benefit, as in the case of a railroad, which becomes itself responsible for

any injury to private property. The saloon business the court holds to be immoral, and therefore subject to license and restraint, in the interest of the public rather than of the saloon-keeper. The Legislature, it is held, did not intend to place liquor-selling above the rights of the citizen and subject him to nuisance and consequent loss, for the benefit of the saloon-keeper. Therefore the court holds that " if the saloon causes property to depreciate in value it is a nuisance within the law and can be abated ;" also that " the person who operates the saloon is liable in damages to the injured party, and the measure of damages is the measure of injury to the property."

The liquor men see the far-reaching restrictive possibilities of this decision, and view it with apprehension. Latterly excise boards in this and many other cities grant numerous licenses for new localities not previously invaded by the saloon, and against strong popular protests. This Indiana decision opens a possible door of relief through the courts by suits to collect from the owners of property rented for saloon purposes, and from the licensed saloon-keepers, damages to the extent of the injury thus caused to the adjacent property of such neighborhoods. By a kindred judicial decree, in other States as well, the saloon as a nuisance should be made to pay, and possibly it may thus be made to " go."—*National Temperance Advocate.*

ASSOCIATION OF ACTING ASSISTANT SURGEONS.

FEBRUARY 16, 1894.

MR. RICHARDS introduced the following bill in the House of Representatives ; the same has been introduced in the Senate by MR. PALMER, February 12th, 1894 :

A Bill to remove certain disabilities of the late acting assistant surgeons.

Whereas before, during, and since the war of eighteen hundred and sixty-one to eighteen hundred and sixty five, but chiefly during the war, private physicians were employed as medical officers, serving under the orders of their superior officers as such, agreeably to Army regulations, in the armies of the United States, in addition to the commissioned medi-

cal staff, because the number of the latter was not sufficient for the necessities of the service. This class of officers was known officially as acting assistant surgeons, because they performed exactly the same duties, and were subject to the same control as commissioned medical officers. These acting assistant surgeons were employed under contract made in accordance with paragraph twelve hundred and sixty-eight, Revised Regulations of the United States Army, eighteen hundred and sixty-one, and paragraphs thirteen hundred and four and seventy-one, Appendix B, Revised Regulations, eighteen hundred and sixty-three, and were obliged to remain in the service of the United States for a stated time. Among these officers were many of the eminent physicians and surgeons of the United States. Some of the duties performed by acting assistant surgeons were as follows: They were in charge and command of United States military hospitals, known as general, division, field, and post hospitals; they had charge and command of United States military hospitals for the care of contagious diseases; they were in command or in charge of hospital trains, hospital boats, and ambulance trains, and were executive officers of United States general hospitals; they acted as brigade and regimental surgeons, and at least one acting assistant surgeon acted as medical director of a department for nearly a year; they were responsible for hospital funds and property, and also post funds; they served on courts-martial, which the Articles of War require shall be composed of officers, and also on boards of survey, in camp, field, and garrison, on overland expeditions, and in Indian wars; they faced death and endured hardships like commissioned officers, and it is known that nearly one hundred and fifty died in the military service of the United States; and

Whereas these acting assistant surgeons were allowed fuel, rations, quarters, and transportation in kind, and to purchase rations from the commissary, and travelling expenses the same as commissioned medical officers with rank of first lieutenant, and were accorded, by order of the War Department, the same protection in their position, the same respectful subordinate conduct, and the same military courtesy from enlisted men as if they were commissioned officers, because they were placed in the position of commissioned officers so far as related

to their duties. Many of them were also required to wear the uniform of an assistant surgeon. Acting assistant surgeons who were disabled by reason of disease contracted or injury received in the military service have been granted pensions under a law which assimilates them to the rank of first lieutenant of the military or Marine Corps ; and

Whereas, because they were not commissioned as officers, but were employed by contract as such, they are denied admission to military organizations like the Loyal Legion and the Grand Army of the Republic ; and to relieve this unjust discrimination, and to give a proper recognition to their patriotism, duties, responsibilities, services, hardships, and exposures, they ought to be entitled to receive the rank for which they are allowed pensions and which will relieve them from these disadvantages. The appended bill is offered for this purpose. It involves no expense to the United States Government and no change in the relative rank of officers of the medical corps of the United States Army who have been or are now in the service of the United States ; Therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That private physicians who were employed as medical officers in the armies of the United States for a period of not less than three months, in accordance with paragraph twelve hundred and sixty-eight of the Revised Regulations, United States Army, eighteen hundred and sixty-one, and paragraphs thirteen hundred and four and seventy-one, Appendix B, Revised Regulations, eighteen hundred and sixty-three, and who were known officially as acting assistant surgeons of the United States Army, and whose services were honorably terminated, shall be commissioned by the President of the United States as acting assistant surgeons of the United States Army ; and the date of employment as acting assistant surgeons to be the date of commission and muster into service, and the date of the honorable termination of service as acting assistant surgeons to be the date of discharge or muster out of service : *Provided*, That no pay or allowance shall be made to any such acting assistant surgeon by virtue of this act ; and this act shall not affect the rank, pay, or emoluments of commissioned medical officers of the United States Army.

HOW SHALL OUR LEPERS BE CARED FOR?*

By BENJAMIN LEE, A.M., M.D., Ph.D., Secretary of the State Board of Health of Pennsylvania.

THE State Board of Health of Pennsylvania and the Board of Health of the city of Philadelphia have had some unpleasant experiences with lepers, which have led both of these bodies to appeal to the general Government to establish a colony or colonies where these unfortunates might be provided with the comforts of home and medical care and nursing, and, at the same time, might cease to be a horrid menace to the health of those with whom they were thrown in close contact. In order to arrive at a somewhat definite opinion as to, first, the need for the adoption of such a measure, and secondly, the general drift of opinion on the part of those who had given the subject thoughtful attention, in December, 1891, I addressed circular letters of inquiry to the secretaries of all State and provincial boards of health in the United States and Canada, and to prominent dermatologists.

Replies to these inquiries have been received in twenty-three instances.

They indicate, briefly, that cases of the disease have been recognized and made the subject of official report in seventeen States and provinces.

In ten States or provinces cases exist at the present time under the observation of the authorities—namely, New Brunswick, 22 cases; British Columbia, 7 cases; New York, 6 cases; Pennsylvania, 4 cases; Illinois, 2 cases; Iowa, 1 case; Minnesota, 7 cases; Wisconsin, 4 cases; Louisiana, 40 cases; California, 24 cases, making in all 117 cases.

At the well-known lazaretto at Tracadie, in the Province of New Brunswick, provision is made for the comfort, care, and treatment of these unhappy beings in a manner in harmony with the dictates of humanity and the requirements of modern

* Abstract of paper read at the World's Public Health Congress, October, 1893.

science, while, at the same time, they cease to jeopardize the health and happiness of others. The United States has only gone so far as to make the affection quarantinable at the sea coast, and to order those found suffering from it on arriving vessels to be at once returned to the ports from which they came. In the different States of the Union the widest diversity prevails both in theory and practice. The only place in which segregation is practised and at the same time humane provision is made for the shelter, maintenance, medical attendance, and nursing care of lepers, is the city of Philadelphia. The manner in which the county authorities who have the care of the other case in Pennsylvania discharge that duty is by no means in keeping with the dictates of humanity or the laws of sanitation.

While their numbers are few, no little rural community, very few States even, feel justified in going to the expense of establishing a lazar house or colony. Is it wise to wait until State after State finds itself compelled, by their increasing numbers, to take this step; or is it not rather the duty of the central Government to gather them all into one properly supervised community, where they can have the companionship of their fellows, the comforts of a thoroughly furnished home, and the advantages of the best medical and surgical skill?

Such is the distinctly expressed opinion of nineteen of the twenty-one eminent dermatologists who favored me with replies to my circular of inquiry.

In conclusion, I desire to say that in determining the importance of this question and the necessity for governmental interference, the numerical method is entirely misleading. One case of leprosy outweighs a hundred of any other disease. If there were but ten lepers in the land instead of more than ten times ten it would be equally the duty of Congress to initiate measures to prevent, if possible, a single addition to the horribly afflicted company.

MORTALITY AND MORBILITY STATISTICS.

By Harry Kent Bell, M.D.

Alabama.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of January a mortality of 75, of which 33 were colored, and 18 were under five years of age. The annual death-rate per 1000 was 28.92.

Zymotic diseases caused 8 deaths, and consumption, 8.

Arkansas.—D. W. Holman, Secretary, Little Rock.

California.—J. R. Laine, M.D., Secretary, Sacramento.

Reports from 97 cities, towns, villages, and sanitary districts, aggregating a population of 831,551, show a mortality of 1234, or a death-rate of 1.48 per 1000 for January, or 17.76 per 1000 per annum.

There were 209 deaths from consumption, 113 from pneumonia, 44 from acute bronchitis, 9 from congestion of the lungs, 1 from diarrhœa, 2 from cholera infantum, 68 from other diseases of the stomach and bowels, 29 from diphtheria and croup, 14 from whooping-cough, 28 from typhoid-fever, 4 from malarial fevers, 37 from cancer, 5 from erysipelas, 115 from diseases of the heart, 7 from alcoholism, 19 from *la grippe*, and 530 from other causes.

San Francisco, 330,000: Total mortality, 607. Consumption, 90.

Sacramento, 30,000: Total mortality, 46. Consumption, 7.

Los Angeles, 65,000: Total mortality, 94. Consumption, 17.

Connecticut.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

Delaware.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the four weeks ending February 24th a mortality of 402, of which number 188 were of colored people, and 139 were under five years of age. The annual death-rate was 18.3 per 1000. There were 64 deaths from zymotic diseases, and 42 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of December, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 528; number of marriages reported, 658; number of deaths reported, 324; birth-rate per 1000 per annum, 16.18; death-rate per 1000 per annum, 9.74; average age of decedents, 36.34; number of deaths under five years of age, 64. Deaths from zymotic diseases numbered 50, and from consumption, 37.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000: A. R. Raynolds, M.D., Commissioner, reports 1808 deaths during January, representing an annual death-rate of 13.56 per 1000.

The mortality under the age of five years was 662. The deaths from zymotic diseases numbered 313, and from consumption, 117.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

The *Monthly Bulletin* makes the following report for January:

Clinton, 22,000: Mortality, 20. Death-rate per 1000, 10.9.

Council Bluffs, 35,000: Mortality, 25. Death-rate per 1000, 8.57.

Davenport, 34,000: Mortality, 54. Death-rate per 1000, 19.0.

Des Moines, 75,846: Mortality, 90. Death-rate per 1000, 14.16.

Dubuque, 40,000 : Mortality, 16. Death-rate per 1000, 7.44.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—L. F. Salomon, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for four weeks ending February 24th, 527 deaths, of which number 181 were among the colored people, and 131 of children under five years of age. There were 76 deaths due to zymotic diseases, and 65 to consumption. The annual death-rate was 27.06 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427 : James F. McShane, M.D., Commissioner, reports for January that the total deaths were 904, an increase of 58, compared with the corresponding month of January, 1893. Of these 693 were whites and 211 colored ; a death-rate of 21.65 per 1000 for the former and 35.66 per 1000 for the latter. The death-rate per 1000 for the whole population was 23.84. Twenty-eight died from infectious diseases, 112 from consumption, 149 from pneumonia, 34 from bronchitis, 59 from influenza, and 12 from typhoid-fever. Three hundred and thirty-one, or 36.61 per cent of the total deaths, were in children under five years of age.

During the month 159 cases of infectious diseases were reported, a decrease of 22 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of February, 1894, compared with the preceding month, the prevailing direction of the wind was the same (southwest), the velocity was slightly greater, the tem-

perature was 5.86° lower, the rainfall at Lansing was .08 of an inch less, the absolute and the relative humidity were less, the day and the night ozone were much more, and the depth of water in the well at Lansing was one inch more.

For the month of February, 1894, compared with the preceding month, intermittent-fever and scarlet-fever increased, and diarrhœa decreased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886–93, the prevailing direction of the wind was southwest (instead of west), the velocity was one mile per hour greater, the temperature was 1.97° higher, the rainfall at Lansing was .63 of an inch less, the absolute and the relative humidity were less, the day and the night ozone were considerably less, and the depth of the water in the well at Lansing was six inches more in the month of February, 1894.

Compared with the average for the month of February in the eight years 1886–93, scarlet-fever was more prevalent, and diarrhœa, intermittent-fever, pleuritis, pneumonia and consumption were less prevalent in February, 1894.

Including reports by regular observers and others, scarlet-fever was reported present in Michigan in the month of February, 1894, at ninety-nine places; diphtheria at forty-nine places; typhoid-fever at twenty-nine places; measles at twenty-four places, and small-pox at four places; consumption was reported present by 35 per cent of the observers making weekly card reports.

Reports from all sources show scarlet-fever reported at seventeen places less; diphtheria at seventeen places less; typhoid-fever at thirty places less; measles at two places more, and small-pox at three places more in the month of February, 1894, than in the preceding month.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing. The mortality record for December was 1352 deaths from all causes. Annual death-rate per 1000, 10.45. The principal causes of death were: Consumption, 146; diphtheria, 60; croup, 29; pneumonia, 140; bronchitis, 34; typhoid-fever, 52; scarlatina, 17; diarrhœal diseases of children, 31.

Minneapolis, 223,700: E. S. Kelley, M.D., Commissioner.

During the month of January, 1894, there were 163 deaths,

representing an annual death-rate of 7.28 per 1000. Zymotic diseases caused 27 deaths, and consumption, 14. There were 65 deaths under five years of age.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

St. Louis, 540,800: George Homan, M.D., Commissioner, reports for February a mortality of 623, of which 213 were under five years of age. The annual death-rate per 1000 was 13.8.

There were 79 deaths from zymotic diseases, and 61 from consumption.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—Ezra M. Hunt, M.D., Secretary, Trenton.

Paterson, 92,793: J. L. Leal, M.D., Health Officer, reports for January 145 deaths, 47 of which were under five years of age. The annual death-rate per 1000 was 17.8. There were 20 deaths from zymotic diseases, and 18 from consumption.

NEW YORK.—Lewis Balch, M.D., Secretary, Albany.

The reported mortality shows an annual death-rate per 1000 population of 19.70, and a daily average mortality of 353, that of December having been 19.20, and the daily rate 342. It corresponds quite closely with the reported mortality of January, 1893. The present prevalence of epidemic influenza began in December, 1000 deaths of that month being attributed to it; 1200 deaths are estimated as due to it this month; the preceding epidemic caused but 1000 deaths in the two months of December and January, and reached its culmination in April. The percentage of infant mortality is low (28.2), and so also is the zymotic mortality (12.4), the common infectious diseases being always relatively low during the prevalence of grippe; the actual mortality from this class

was 1355 against 1441 in December, and 1436 in January, 1893. Typhoid-fever shows an unusually low prevalence. Scarlet-fever is much less prevalent than a year ago. Measles caused more deaths than at any time since the spring of 1892, but is limited almost entirely to the maritime district. Diphtheria caused 678 deaths, the same as in December, its increase having commenced last October, since when the mortality has been greater than for more than two years; it has prevailed chiefly in New York and Brooklyn, other parts of the State being exceptionally free from it except localities in the East Central district, some of which have come under direct care from this Board. Of 34 deaths from small-pox, 19 occurred in the Kings County Hospital for Contagious Diseases, all of which probably originated in Brooklyn; within a short time cases have developed in Utica, Troy, South Mount Vernon, Yonkers, and College Point, the first originating in Chicago, the rest in New York. There is a large increase in the mortality from acute respiratory and other local diseases, and also in deaths attributed to old age. The weather was on an average several degrees warmer than the average, and the rainfall deficient; except at the extreme south and west the wind was southerly.

New York, 1,925,569: Total deaths, 3924–1555 under five years. Death-rate, 24.00. Zymotic diseases per 1000 deaths from all causes, 164.63. Deaths from consumption, 421.

Brooklyn, 1,003,781: Total deaths, 1554–551 under five years. Death-rate, 18.23. Zymotic diseases per 1000 deaths from all causes, 128.70. Deaths from consumption, 207.

Syracuse, 91,944: Total deaths, 147–42 under five years. Death-rate, 22.12. Zymotic diseases per 1000 deaths from all causes, 122.50. From consumption, 11.

Albany, 98,000: Total deaths, 213–52 under five years. Death-rate, 26.00. Zymotic diseases per 1000 deaths from all causes, 84.50. From consumption, 29.

Buffalo, 300,000: Total deaths, 409–132 under five years. Death-rate, 16.35. Zymotic diseases per 1000 deaths from all causes, 130.00. From consumption, 39.

Rochester, 150,000: Total deaths, 213–46 under five years. Death-rate, 17.05. Zymotic diseases per 1000 deaths from all causes, 136.18. From consumption, 26.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the North Carolina Board of Health we find that during January there were 201 deaths in 28 towns, aggregating 145,154 population ; 121 were of colored people, and 50 were of children under five years of age.

The annual death-rates were 11.2 per 1000 for the white population, 24.3 for the colored population, and 16.6 for the total. There were 32 deaths from consumption, 2 from typhoid-fever, 42 from pneumonia, and 4 from diarrhœal diseases.

Asheville, 12,000 : Total deaths, 16. Annual death-rate, 16.0 per 1000.

Charlotte, 14,000 : Total deaths, 25. Annual death-rate, 21.4 per 1000.

Raleigh, 15,000 : Total deaths, 28. Annual death-rate, 22.4 per 1000.

Wilmington, 22,000 : Total deaths, 32. Annual death-rate, 17.4 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

Grand Forks, 8500 : Typhoid-fever appeared during the prevalence of a light epidemic of influenza (*la grippe*) in December ; but *la grippe* seemed to predominate, and it was some days before its true nature developed sufficiently to make a true diagnosis. It was found to be due to the poisoning of the water supply by sewage from Crookstown, some sixty miles above the intake cribs situated in Red Lake River. Since December 31st to the date of this report (March 1st) there have been, as near as can be estimated, 1100 cases with 72 deaths. From other diseases during the interval the number of deaths was 36.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

The *Monthly Sanitary Record* furnished the following report for the month of December : Forty-seven cities and towns, having an aggregate population of 1,203,899, returned 2173 deaths, of which number 546 were under five years of age. The annual death-rate was 19.98 per 1000. Zymotic diseases aused 426 deaths, and consumption, 226.

Seventy-six villages, with an aggregate population of 137,616, returned 233 deaths, of which number 25 were under five years of age. The annual death-rate was 20.31 per 1000. Zymotic diseases caused 36 deaths, and consumption, 19.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

Philadelphia, 1,139,457 : M. Veale, Health Officer, reports : In the four weeks ending February 24th, 1894, there were 1908 deaths, of which number 667 were under five years of age. Annual death-rate, 21.8 per 1000. Deaths from consumption numbered 215, and from zymotic diseases, 257.

Pittsburg, 264,000 : J. Guy McCandless, M.D., Registrar, reports : During the four weeks ending February 24th, 1894, there were 348 deaths, of which 143 were under five years of age. Annual death-rate, 17.03 per 1000. Zymotic diseases caused 77 deaths, and consumption, 32.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

The number of deaths recorded in the 28 towns and cities, from which returns have been received, was 602, in a population of 323,941. The annual death-rate was 22.32 in every 1000 of the population, still-born included.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of January, were : Lung diseases, acute, *la grippe*, consumption, typhoid-fever, rheumatism, malarial-fever, scarlet-fever, small-pox, whooping-cough, chicken-pox, diphtheria, and measles.

Chattanooga, 27,000 white and 13,000 colored: Total deaths, 58–33 of which were colored, and 17 under five years of age. Annual death-rates, 11.11 for the white population, and 30.46 for the colored, per 1000.

Memphis, 32,376 white and 25,575 colored: Total deaths, 94–55 of which were colored, and 10 under five years of age. Annual death-rates, 14.45 white, and 25.80 colored, per 1000.

Knoxville, 31,273 white and 9112 colored: Total deaths, 41–17 of which were colored, and 12 under five years of age. Annual death-rates, 8.82 white, and 22.38 colored, per 1000.

Nashville, 54,595 white, 33,159 colored: Total deaths, 134–70 of which were colored, and 47 under five years of age. Annual death-rates, 14.06 white, and 25.33 colored, per 1000.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—J. T. Reeve, M.D., Appleton.

Milwaukee, 260,000: U. O. B. Wingate, M.D., Commissioner.

During the month of January there were 335 deaths reported, 176 of which were under five years of age. The annual death-rate was 15.17 per 1000. Zymotic diseases caused 84 deaths, and consumption, 35.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 575,587: Albert B. Martinez, Director-General of Municipal Statistics.

During the month of November, 1893, there were reported 1317 deaths, of which 790 were under five years of age. The annual death-rate per 1000 was 27.4. From epidemic diseases there were 115 deaths, and from consumption, 110.

SMALL-POX AND VACCINATION AT LEICESTER—STRIKING TESTIMONY.—Some interesting vaccination statistics were given by the Chairman of the Sanitary Committee, at the last meeting of the Leicester Town Council. It appears that there have been 281 cases of small-pox treated in the hospital during the past year, and of these 126 were unvaccinated (13 died), while 155 had been vaccinated in infancy, but not re-vaccinated; of these none died. Still more significant is the fact that, of the unvaccinated, 83 were children under ten years of age—that is, 65.9 per cent of the unvaccinated; of these 83.9 died. Thus Leicester has suffered severely as regards her infantile unvaccinated population—much more severely, proportionately, than any other town. The Chairman of the Sanitary Committee went on to make the striking and most satisfactory statement "that there had been no case of a vaccinated child under ten years of age treated for small-pox!"—*British Medical Journal.*

THE DISINFECTION OF LETTERS.—Mr. Washington Lyon, in a letter to the *British Trade Journal*, gives an interesting proof that steam is admissible for disinfecting letters. He says: "The Asylums' Board Hospital at Darenth, in Kent, have all letters written by patients there passed through the steam disinfector before being posted at the Dartford Post-Office. Previously this could not be done, as they had no steam disinfector. At that time (1884) there were one thousand small-pox patients at the hospital camps, and the post-office authorities complained that so many of their employés were thus taken ill with small-pox. Since this mode of disinfecting was adopted no complaint has been made. I understand that all letters are now disinfected before posting that are written in their fever hospitals. I know of a recent case where there was only one letter to be posted, but this had to pass through the apparatus, carrying out not only the spirit of the Board's instructions, but also the 'letter.' No doubt these precautions have checked the spread of small-pox, for in 1884 there were three thousand cases in the hospitals at one time, now there are not thirty in the whole of the metropolis. Neither the ink, the gum of the envelop, or the adhesive stamp is affected by this process of disinfection."

MEDICAL EXCERPT.

By T. P. CORBALLY, A.M., M.D.

THE PLACENTA AS AFFECTED BY SUBSTANCES THAT PASS THROUGH IT.—M. Porak (*La France Médicale*, January 5th, 1894) said, in a communication to the Académie de Médecine : "I have, since 1877, studied with great care, and made very many experiments, to determine the passage of certain substances through the placenta, or their accumulation in it, and have obtained the following results :

"Arsenic, copper, lead, atropine, and phosphorus pass through the organ ; mercury, alizurine do not pass through the placenta. This organ is a place of election for the accumulation of copper, and especially of mercury. It does not retain lead.

"The presence in the placenta of substances foreign to the organism proves conclusively that it is through this organ that the interchange of substances between the mother and the fœtus takes place.

"Poisons accumulate in far greater quantities in the tissues of the fœtus than in those of the mother, because probably of their greater power of assimilation. They are more readily diffused in the child, in which they are found in the liver, in the central nervous system, and in the skin, than they are in the mother, in whom they are found almost exclusively in the liver. This circumstance allows us to distinguish, in the accumulation of poisons, an elective affinity for diffusion in the tissues and for transmission through the liver.

"This toxic action in the child enables us to understand the pathogenic conditions of abortion, which is generally due to the direct action on the placental circulation, or to the reflex effect of the health of the mother on the health of the fœtus. It explains many of the still-births and the great mortality of the fœtus by the accumulation of the poison either in the placenta or in the central nervous system.

"These investigations give the measure of the receptivity of the tissues for poisons which are estimated with great diffi-

culty in the adult on account of their accumulation in the liver, as they are carried through that organ. They explain either the symptomatology of the intoxication or the therapeutic action of poisons administered in tolerable doses."

TRIONAL AS A HYPNOTIC IN GENERAL PRACTICE.—The requisites of a satisfactory hypnotic for general use in medical practice are reliability and promptness of action, ease of administration, freedom from toxic or unpleasant effects, and from the risk of a habit. During the last two years a large number of observations have been published, showing that trionâl is a hypnotic of exceptional value. In an interesting article in the New York *Medicinische Monatsschrift* (December, 1893), Dr. L. Stieglitz reports his experience with this remedy in fifty-eight cases, and expresses the opinion that trional best meets the demands of the practitioner for a prompt, safe, and effective sleep producer. In most of his cases doses of 1.0 gramme sufficed to produce a quiet and refreshing sleep, and repetition of the dose was but rarely required. As sleep occurs in the course of ten to thirty minutes after its administration, it was found advisable to give it on retiring or half an hour before. In the treatment of cases of simple agrypnia, Dr. Stieglitz distinguishes two groups; first, patients who are unable to sleep, and second, those who, after sleeping for a few hours, are restless for the remainder of the night. In some cases of the second group the best results were obtained by giving the trional on awaking at night. The remedy was also employed in a few cases of febrile diseases and of alcoholism, epilepsy, melancholia, sciatica, and facial neuralgia with good success. Among the fifty-eight cases treated failure to produce sleep was noted in but four instances, while Mattison was successful in 90 per cent and Boettiger in 98 per cent of his cases. This is certainly an excellent showing for the new hypnotic, and entitles it to the confidence of the physician.

WHEELER'S TISSUE PHOSPHATES.—Dr. Wheeler, of Montreal, prepares a preparation, under the name of "Wheeler's Tissue Phosphates." It combines with aromatics in the form of an agreeable cordial, phosphate of lime, phosphate of iron, phosphate of soda, phosphoric acid, active principles of cali-

saya and wild cherry. It is really a very elegant and beautiful preparation, and is taken with ease by the most fastidious palate. But what is more important is that it is a reliable medicine, and is useful in a large number of cases. We have employed it tolerably extensively during the past year, and have every reason to be satisfied with the results it produced; we, therefore, have no hesitation whatever in recommending it. In February last, according to the Detroit *Review of Medicine*, Dr. Connor, of that city, brought this preparation before the Academy of Medicine, and spoke most favorably of it. The result has been that quite a demand has sprung up for it in Detroit. Its range of applicability is great, and we think that our Detroit friends have not done badly to get from Montreal so beautiful and agreeable a vehicle of administering such important drugs as the phosphates.—*Medical Record.*

ANTIKAMNIA, writes C. A. Julian, M.D. (*North Carolina Medical Journal*), acts as an antipyretic, analgesic, and anodyne. As an antipyretic in fevers it acts more slowly than antipyrin, but is not attended with as much depression of the cardiac system and cyanosis. Whenever a sedative and an analgesic together is indicated, this remedy meets the demand. In severe headaches it is the remedy *par excellence.*

THE RADICAL CURE OF HERNIA.—In a discussion upon the radical cure of hernia, held at the recent meeting of the British Medical Association, Parker (*British Medical Journal*, No. 1715, page 1037) took the ground that the radical cure of inguinal hernia in childhood and infancy can be attained with ease, almost as a matter of certainty, and that operation should be urged when the disease exists at this time of life. The cure of inguinal and femoral herniæ in men and women is considered attainable in the large majority of cases, the exceptions being sometimes the large herniæ, at other times the small. Macewen's operation is held to be the best for inguinal and femoral herniæ at all periods of life. Umbilical hernia in adults is thought to be capable of radical cure, in a proportion, however, much below that of success in femoral and inguinal, and far short of the requirements of many of

the cases. The radical cure is further believed, as a rule, to be applicable to strangulated and unstrangulated herniæ alike.

VARICOSE LYMPHATICS of the mucous membrane of the lips, due to a relapsing erysipelas of the face. MM. Tennison and J. Darier (*La France Médicale*, January 12th, 1894) presented to the Société Française de Dermatologie et de Syphilographie, a young girl, nineteen years of age, who, since her seventh year, had a succession of attacks of erysipelas of the face—from three to four a year—the last of which occurred in March, 1892.

Following these attacks of erysipelas, which do not usually cause much febrile reaction, the patient has developed a tendency, especially since the last attack, to a permanent lymphatic œdema of the right cheek, with swelling of the lower lid —that is, a true elephantiasis. There is also a chronic œdema, though not well marked, of the left cheek.

Besides, since the last attack of erysipelas, there has appeared on the mucous membrane of both lips and on the adjoining parts of the cheeks a great number of transparent vesicles, deep in the mucous membrane, about the size of heads of pins, without any redness around them and not painful. Some of these vesicles break spontaneously, and new ones are immediately produced. There is no ganglionic congestion perceptible around the neck, but in the submaxillary region there are many cicatrices, the evidence of former abscesses.

The incisions made into them, and the histological examination of some of these pseudo-vesicles, have proved that they are varicose lymphatics, developed either in the papillary lymphatics or in the sub-papillary sinuses. The cavities contain lymph, and are enclosed in an endothelium without any other proper wall. No streptococci have been found in the tissue.

On puncturing one of these lymphatic sacks with a lance, not one drop, as usual, but many, may be drawn from them. Sometimes nearly a cubic centimetre might be collected. It is probable that the chronic œdema of the varicose lymphatics are of mechanical origin, and attributable to an obstruction of the lymphatics, caused by lymphangitis, or to a sclerosis of the ganglion, due to repeated attacks of erysipelas.

THE FIBRES OF THE PEDUNCLE and Researches Regarding the Nature of their Cortical Connections was the subject of a communication to the Société de Biologie, by M. Déjerine (*Gazette Hebdomadaire*, January 7th, 1894), as follows:

In certain cases in which lesions of limited portions of the cerebral cortex were found, he was able to determine circumscribed and continuous lesions of the cerebral peduncles. These lesions are continued into the protuberance of the bulb and spinal cord—a fact which proves the connection of the different parts of the encephalo-rachidian nervous axis. Some fibres are arrested in their transition, but others are prolonged to a great distance, thus establishing a remote connection between the cord and certain regions of the cerebral cortex in the passage through the cerebral peduncles. However, the lesions of the occipital lobe and those of the anterior part of the frontal lobe seem to exert no influence on the base of the cerebral peduncle.

It was rather the central parts of the fissure of Rolando, whose fibres connect with the base of the central peduncle, that have been specially studied by M. Déjerine.

The fibres of the interior fasciculi of the peduncle are derived from the apercule of Rolando, the posterior part of the third frontal, and the part entirely below the ascending circumvolution.

The exterior fascicle takes its origin from the middle of the second and third temporal circumvolution.

The origin of the middle fascicle of the foot of the peduncle is somewhat more complex. It is known that to Charcot belongs the merit of having demonstrated the secondary degeneration of the fibres of this middle fascicle, following cortical lesions of the zone of Rolando. "That is," said M. Déjerine, "what I have been able to determine on that point."

The lesions of the middle third of the zone of Rolando—the ascending circumvolution—produce the degeneration of the two inner fifths of the fascicle; those of the superior part of the ascending circumvolution and of the paracentral lobe determine the degeneration of the rest—that is to say, of the anterior part of this middle fasciculus.

When the lesion extends over all the zone, all parts of the fascicle are degenerated.

IPECAC, in a bolus of twenty grains, taken early in the morning, before food, it is reported from India (London correspondent *American Practitioner*, January 27th, 1894), supersedes all hemostatics for hemorrhage from bleeding surfaces, epistaxis, hemoptysis, or uterine hemorrhage. It has been found that on an empty stomach no laudanum or sinapisms are necessary to avert emesis. The recumbent position must be enforced.

TRANSIENT APHASIA was the subject of a very interesting communication to the Société des Hôpitaux, a case of which was observed in a patient with penumonia by M. Chantemesse (*Gazette Hebdomadaire*, January 7th last).

The pulmonary lesion probably acted remotely on the circulation in the sylvian artery and its branches. These disturbances of the circulation have reacted in turn on the functions of the root of the third frontal convolution on the left side.

Cases of aphasia produced by pneumonia are rare, and it is well to remember, when they are met with in practice, that they are usually transient and without danger.

A case somewhat analogous to this occurred in the service of the writer in Saint Peter's Hospital, Brooklyn, a young man, about twenty-five years of age, of vigorous constitution and of previous good health, was admitted to the hospital for lead poisoning. The patient was employed in a lead factory, and his system seemed thoroughly saturated with the poison. The upper extremities were almost powerless, and the bowels extremely painful and difficult to be moved. The pulse was feeble, the countenance haggard, and the general sensibility much impaired.

These symptoms began to yield about the seventh day, when it was observed that he had difficulty in explaining his condition, and the usual mistakes in the employment of words were made. On the tenth day he was unable to express himself intelligibly; and this condition lasted until the thirteenth day, when a slight improvement was observed. The patient gained slowly from that time, and finally made a good recovery. More than five years have now elapsed, and he has shown no signs of the lead poisoning nor of the aphasia.

EDITOR'S TABLE.

SANITARIAN, APRIL NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

THE NATIONAL HEALTH SERVICE, at the time of going to press with this number, is still undefined. The New York Academy of Medicine Committee has found its action promotive of the national quarantine law last year, and its recent effort to absorb all the obligations of that law by a national bureau, so irreconcilable that, at last accounts, the committee is reported to have completely changed its base—abandoned the Treasury Department, and placed the bureau bill under the auspices of the Department of the Interior, dispensed with *ex-officio* officers, reduced the number of commissioners from fifteen—to serve for honor—to one, to be paid a salary; provided an advisory council to consist of one member from each State, to be appointed by the Governor thereof, to be paid five dollars a day and travelling expenses when on duty.

Thus, with regard to discord, the Committee has jumped from the frying-pan into the fire, for in abandoning the *ex-officio* membership of the Surgeon-Generals, it has provided for it no less effectually in the appointment of the advisory council, regardless of the State boards of health; in a way above all others best calculated to subordinate sanitary knowledge to State politics. In other respects the bill is virtually the same as the one which it supersedes.

The proposed bill for a national Board of Health, as formulated in our March number, contemplates an elaboration of the duties of the Marine Hospital Service to the required sanitation of vessels at *home* ports of departure as an essential duty, even more necessary than foreign, if we would secure international co-operation against the transportation of epidemic diseases. Moreover, from information in our possession, we are persuaded that our ability to secure an effective international sanitary service rests upon such an elaboration.

We have learned that the inherent rights of the civil authorities of several foreign ports last year were greatly strained by the tolerance of the presumption of the medical officers in relation with our consular service; and some there are resolved upon its denial in the future. And this is by no means surprising when we consider how much in advance of the United States several European nations are in practical sanitation. That some of them are more subject to epidemic diseases than the United States is because they have more populous centres and more poverty and squalor—conditions which we are rapidly approaching. And to better contend with these conditions, we should have a national Board of Health, chosen with special reference to practical knowledge of such conditions, but endowed with the duty and privilege of acquiring and utilizing whatever knowledge may be gained by the advisory council of all national and state authorities who are concerned for the protection of the health of the people. The bill we propose provides for this.

THE SEWAGE OF PARIS.—A bill is now before the Chamber of Deputies to enable the city of Paris to negotiate a loan of 117,000,000 francs, for the purpose of developing a sewage farm and for the construction of sewers therewith. By this means it is proposed to prevent the pollution of the Seine and thus remove a fruitful cause of disease. The authorities have the wisdom to discern that if Paris shall continue to be as she is now, a great centre of attraction for pleasure seekers, she must not only be a city of beauty, but a city of health. For the securing of this end any needful amount of expenditure will be fully warranted. The same question of sewage confronts the city of Chicago It is hoped that the great drainage canal may fully meet our needs, but almost any outlay will be warranted which shall secure to Chicago that for which all else befits her as one of the most desirable health resorts on the continent.

COMPULSORY VACCINATION.—The following bill, relative to vaccination, has been introduced in the Massachusetts Senate, and referred to the Committee on Public Health:

SECTION 1. Parents and guardians shall cause their children and wards to be duly vaccinated before they attain the age of two years. For every year's neglect, the party offending shall forfeit the sum of ten dollars.

SEC. 2. The Board of Health in any city or town shall require and enforce the vaccination and revaccination of all the inhabitants thereof whenever in the opinion of said board the public health or safety requires such action. Every person over twenty-one years of age, not under guardianship, who neglects to comply with such requirement, shall forfeit the sum of ten dollars.

SEC. 3. The Board of Health in any city or town shall furnish the means of free vaccination or revaccination to all the inhabitants thereof whenever in the opinion of said board the public safety requires it.

SEC. 4. Incorporated manufacturing companies, superintendents of almshouses, State reform schools, industrial schools, lunatic hospitals and other places where the poor or sick are received, masters of houses of correction, jailers, keepers of prisons, the warden of the State prison, and superintendents or officers of all other institutions supported or aided by the State, shall, at the expense of their respective establishments or institutions, cause all the inmates thereof to be vaccinated or revaccinated whenever in the opinion of the Board of Health, in the city or town in which such establishments or institutions are situated, the health of the inmates thereof or the public safety requires such action.

SEC. 5. Sections 51, 52, 53, 54, and 55 of Chapter 80 of the Public Statutes are hereby repealed; *provided*, that nothing herein contained shall be construed as affecting any action that may be pending under said sections at the time of the passage of this act.—*Boston Medical and Surgical Journal.*

The provisions of the Public Statutes referred to in the last section are equivocal, and have been found to be ineffective, insomuch that, in Massachusetts as generally throughout the United States, the number of unvaccinated persons, both native and foreign, is so large as to endanger a general epidemic of small-pox.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

AN AMERICAN TEXT-BOOK OF THE THEORY AND PRACTICE OF MEDICINE, FOR PRACTITIONERS AND STUDENTS. By J. S. Billings, M.D.; Francis Delafield, M.D.; R. H. Fitz, M.D.; James W. Holland, M.D.; E. G. Janeway, M.D.; Henry M. Lyman, M.D.; William Osler, M.D.; William Pepper, M.D.; W. Gilman Thompson, M.D.; W. H. Welch, M.D.; James T. Whittaker, M.D.; James C. Wilson, M.D., and Horatio C. Wood, M.D. Edited by WILLIAM PEPPER, M.D., LL.D. In two handsome royal 8vo volumes of about 1000 pages each, profusely illustrated. Price per volume, cloth, $5; sheep, $6; half Russia, $7. Philadelphia: W. B. Saunders.

Of the first volume of this superb work we had occasion to say (Vol. XXX., p. 470): "The enumeration of this authorship is a guarantee of the quality of the work." Insomuch, may now be added, on the completion of the work, that though not a systematic treatise, there is no work with which we are acquainted which so thoroughly comprehends all that is most useful as a text-book for students or manual for the practitioner, to the exclusion of what modern progress has proved useless, as this. While the authors are without exception known to be in the vanguard of scientific medicine in its most comprehensive sense, covering the whole field, their division of labor and masterly devotion severally to the most important subjects comprehend the gist of elaborate treatises on special subjects. For example, the opening chapter of this volume, by Professor Welch, on the "General Considerations Concerning the Biology of Bacteria, Infection, and Immunity," which occupies but sixty-nine pages, is no less remarkable for

its comprehensiveness of all that is practical than for its conciseness of statement. The same may be said of Professor Osler's chapter on "Diseases of the Blood," and other subjects. But of none more than those by the distinguished editor, Professor Pepper, on "Diseases of the Heart, Blood Vessels, and Digestive Organs." Altogether, for the medical student who would obtain the concentrated thought of the masters in medicine, and practitioners who would know just where they are now at in scientific progress, this work is the standard bearer.

AN AMERICAN TEXT-BOOK OF THE DISEASES OF CHILDREN, including special chapters on essential surgical subjects; diseases of the eye, ear, nose, and throat; diseases of the skin; and on the diet, hygiene, and general management of children. By AMERICAN TEACHERS. Edited by LOUIS STARR, M.D., Physician to the Children's Hospital and Consulting Pediatrist to the Maternity Hospital, Philadelphia; Late Clinical Professor of Diseases of Children in the Hospital of the University of Pennsylvania; Member of the Association of American Physicians and of the American Pediatric Society; Fellow of the College of Physicians of Philadelphia, etc., Assisted by THOMPSON S. WESTCOTT, M.D., Attending Physician to the Dispensary for Diseases of Children, Hospital of the University of Pennsylvania; Physician to Out-Patient Department, Episcopal Hospital; Fellow of the College of Physicians of Philadelphia. A handsome royal 8vo volume of nearly 1200 pages. Profusely illustrated with woodcuts and 28 half-tone and colored plates. Price, cloth, $7; sheep, $8; half Russia, $9. Philadelphia: W. B. Saunders.

This work is a companion treatise to the immediately preceding; closely limited to, while completely covering the field of pediatrics, which has been the subject of many special books. Like the preceding in comprehension, yet thoroughly condensing the whole subject without omitting anything that is now known to be useful and practical. Of the sixty-three contributors to the work, besides the editors, every one of them is or has been heretofore in practical relations with one or more institutions favorable to clinical observations on the diseases of children.

The work opens with an introduction on the clinical investigation of disease, and the general management of children—"Feeding, Bathing, Clothing, and Sleep," by the editor; "The Chemistry of Milk and of Artificial Foods for Children," by Alfred R. Leeds, Ph.D.; "Exercise and Massage," by J. Madison Taylor, A.M., M.D., and "Sea Air and Sea Bathing in Convalescence," by W. M. Powell, M.D., taking up sixty-seven pages. The remaining portion of the work is divided into thirteen parts: 1. Injuries Incident to Birth and the New-born. 2. Diathetic Diseases. 3. Acute Infectious Diseases. 4. General Diseases not Infectious. 5. Diseases of the Blood. 6. Diseases of the Digestive Organs. 7. Diseases of the Nervous System. 8. Diseases of the Respiratory Systems. 9. Diseases of the Heart. 10. Diseases of the Genito-Urinary System. 11. Diseases of the Skin. 12. Diseases of the Ear. 13. Diseases of the Eye. These several parts are but so many general titles to a subdivision into distinctive articles by the different contributors, every one of which is characterized by that freshness of treatment which is common to a masterful comprehension of the subject treated by practical observation under scientific methods. As a whole, the work is thoroughly abreast with the progress that has been made during recent years in the hygienic care of children and the treatment of the diseases to which they are liable, commendable alike to medical students and medical practitioners.

THE DISEASES OF PERSONALITY. By THOMAS REBOT. Price, 25 cents. Chicago: The Open Court Publishing Co.

A paper-bound book of one hundred and sixty pages devoted to the study of the *organic, emotional, and intellectual conditions of ego.* The problem being to know thyself psychologically from a philosophical investigation. What is the individual? That is the question considered by one of the most profound psychologists of the time—commendable to all who are interested in such studies.

A MANUAL OF PRACTICAL HYGIENE; 138 illustrations, some of which are in colors. By W. M. L. COPLIN, M.D., Adjunct Professor of Hygiene, Demonstrator of Pathology,

and Curator of the Museum, Jefferson Medical College; Adjunct Professor of Pathology in the Philadelphia Polyclinic and College for Graduates in Medicine; A. A. Surgeon, U. S. Marine Hospital Service, Philadelphia; and D. BEVAN, M.D., Assistant Department of Hygiene and Instructor in Clinical Microscopy, Jefferson Medical College; Bacteriologist St. Agnes Hospital, Philadelphia. With an Introduction by PROFESSOR H. A. HARE. Illustrated by wood engravings, including many original drawings by Dr. Bevan. 8vo, pp. 576. Price, $4. Philadelphia: P. Blakiston, Son & Co.

We know of no more encouraging sign of the times than the multiplication of books on preventive medicine. The only drawback in this respect is the encouragement of mere book-making out of the literature of the subject instead of contributing to progress by suggestions for improvement derived from a practical knowledge of that which has preceded. "The authors of this manual," like the authors of two or three other manuals reviewed in these pages during recent years, tell us that they "have endeavored to prepare a text-book, *the first complete work from an American standpoint.*"

The work is divided into twelve chapters, as follows: Hygiene, Health, Cause and Prevention of Disease; Individual or Personal Hygiene; Clothing; Food; Water; Air; Climate; Soil; Habitations; Sewage; Disposal of the Dead; Technic; and an appendix comprising the metric system, barometric and thermometric scales, and thermal disinfection. The subjects here enumerated are very unequally treated. Bacteriology is well summarized, and the chapter on water, comprising diseases due to impure water, water purification, and water examination, is excellent, and commendable to the practical sanitarian. The chapters on Personal Hygiene, Clothing, Air, Soil, Disposal of the Dead, and Technic are also good, but some of them inadequate. Baths, bathing, and bath-rooms are scantily treated, and public baths are not mentioned. Excepting these omissions and the tacit endorsement of water-closets in bath-rooms, plumbing is well presented. Nuisances are disposed of in four lines, by simply naming some of their common causes.

The chapter on Food is chiefly valuable for its thorough consideration of milk, its liability to contamination, inspection,

and analysis. Meat inspection is also well considered. It is somewhat surprising to note Bauer's old table on the approximate food value of the cereals, taken from Yeo's "Food in Health and Disease," and the omission of any references to the more recent and elaborate statement of the nutritive value of foods by Professor Atwater from an American standpoint —which is much better.

Sewage, sewerage, and the protection of water supplies altogether take up six or eight pages without referring to the magnificent work under the auspices of the State Board of Health of Massachusetts, or other similar work in America, which, from a sanitary standpoint, reveals an object lesson of such great practical utility that no American work on sanitation should fail to notice it.

However, no practical sanitarian should expect to find in the compass of this volume more than a mere epitome of some of the subjects comprehended in its chapter titles. Some of the subjects, as remarked, are admirably treated, and for these the book is commendable. For a "complete work" on preventive medicine the reader is referred to the elaborate "Treatise on Hygiene and Public Health," by Stephensen and Murphy, from the same publishers as the book before us, reviewed (in part) in our March number.

APPLETON'S ILLUSTRATED HANDBOOK OF AMERICAN WINTER RESORTS; FOR TOURISTS AND INVALIDS. WITH MAP, ILLUSTRATIONS, AND TABLE OF RAILWAY FARES. REVISED TO DATE, 1894. Price, 50 cents. New York: D. Appleton & Co.

The title-page of this manual suggests its usefulness. It comprises a concise description of all the American winter resorts, including the West Indies, Bermudas and Hawaiian Islands; summarizes the climates, hotel accommodations, facilities for enjoyment round about—in short, everything of interest to those who would seek health or pleasure by changes of climate.

LECTURES ON AUTO-INTOXICATION IN DISEASE; OR, SELF-POISONING OF THE INDIVIDUAL. By CHARLES BOUCHARD, Professor of Pathology and Therapeutics, Member of the

Academy of Medicine, and Physician to the Hospitals, Paris. Translated, with a Preface, by THOMAS OLIVER, M.A., M.D., F.R.C.P., Professor of Physiology, University of Durham; Physician to the Royal Infirmary, Newcastle-upon-Tyne; and Examiner in Physiology, Conjoint Board of England. In one 8vo volume, pp. 302. Price, extra cloth, $1.75 net. Philadelphia: The F. A. Davis Co., publishers, 1914 and 1916 Cherry Street. This is a particularly interesting, indeed necessary book, to all physicians who have not already made themselves familiar with the distinctive diseases and processes due to poisons introduced from without or generated within the human body, and the parts they play respectively. Ptomaines and leucomaines have become familiar words during recent years, and the object of this book is to lay before the reader not only the marked difference in the alkaloids due to such entirely opposite causes, but to demonstrate their conditions respectively, and their results to the human organism.

The work consists of thirty-two lectures. Beginning with pathogenic processes in man, it proceeds to consider the production and elimination of poisons by the organism, the sources of toxicity in the various diseases, and the general therapeutics of self-poisoning. An eminently useful book to all physicians.

THE STANDARD DICTIONARY OF THE ENGLISH LANGUAGE. Vol. I. Prices: single volume edition, half Russia, $12; full Russia, $14; full Morocco, $18. Two-volume edition: half Russia, $15; full Russia, $17; full Morocco, $22. New York: Funk & Wagnalls Co.

The four years' evoluting of this remarkable work is fully justified by the result. Some of its excellences, as indicated by *fac-simile* proof sheets sent us, were referred to in these pages several months ago (Vol. XXX., p. 558). The particularly striking characteristics of the volume before us are its magnitude and superiority of workmanship, the former as representing the growth or fulness of the English language rather than massiveness of the book; and the latter comprising excellence and elegance in the details. Yet, with regard to the former, one can but be struck with the apparent commonness and usefulness of many of the additional words, though not

found in other dictionaries of the language. For example, the word *apple:* after giving the definition and etymology, follows an enumeration of thirty-four varieties, with explanations; and after this the names of three hundred and twenty-four species, very few of which are to be found in other dictionaries. The word *horse*, besides that which is common to other large dictionaries of the language, is followed by a whole page of illustrations of and notes on the different types of horses. *Bacteria* are represented by twelve figures and explanatory notes, occupying a quarter of a page. Other examples could be easily cited, showing the greatly increased usefulness of the work because of its much greater fulness, as compared with any previous publication, summarized as follows:

"When Dr. Johnson published his dictionary he brought the language within 45,000 words; Stormonth raised the list to 50,000; Worcester to 105,000; Webster's (International) to 125,000; the Century to 225,000, and the Standard to nearly 300,000. Thousands of words are here admitted for the first time into a general dictionary, and over 4000 have come from the electrical developments of the last few years. The space gained by throwing out obsolete words, or those which are of no practical value, has been many times occupied by the introduction of living words that should be found in a dictionary that appeals to the whole of the English-speaking race."

The plan and workmanship of the volume are in keeping with its comprehensiveness—fulness without redundancy and excellence without ostentatious display. The editors are well known as men of the first rank in scholarship. They have availed themselves of all the recent developments in the sciences and arts; have done well in adopting the improvements in spelling and pronunciation approved by the American Philological Association, and in simplifying the spelling of chemical and other scientific terms and words as defined by scientific specialists. That it is thoroughly up to date in everything appertaining to English speech and literature is without question, considering the editorship.

The publishers have spared no pains or expense to make it the most complete work of the kind ever published. The

paper, type, and all the mechanical work of the volume are of the best. The colored plates and other illustrations, which are numerous, are of rare excellence and beauty.

That it will at once take rank as the standard dictionary of the English language can scarcely be doubted by any one who will take the pains to examine its merits.

NOTICES.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS, WASHINGTON, D. C., MAY 29TH, 30TH, 31ST, AND JUNE 1ST, 1894.

President, Alfred Loomis, M D., New York City.

Vice-Presidents, ex officio:

The President of the American Ophthalmological Society, Dr George C Harlan, Philadelphia, Pa.

The President of the American Otological Society, Dr. Gorham Bacon, New York City.

The President of the American Neurological Association, Dr. B. Sachs, New York City.

The President of the American Gynæcological Society, Dr. William T. Lusk, New York City.

The President of the American Dermatological Association, Dr. Robert B. Morison, Baltimore, Md.

The President of the American Laryngological Association, Dr. D. Bryson Delavan, New York City.

The President of the American Climatological Association, Dr. Andrew H. Smith, New York City.

The President of the Association of American Physicians, Dr. Reginald H. Fitz, Boston, Mass.

The President of the American Association of Genito-Urinary Surgeons, Dr. George Chismore, San Francisco, Cal.

The President of the American Orthopædic Association, Dr. A. M. Phelps, New York City.

The President of the American Physiological Society, Dr. Henry P. Bowditch, Boston, Mass.

The President of the Association of American Anatomists, Dr. Harrison Allen, Philadelphia, Pa.

The President of the American Pediatric Society, ———, Colorado Springs.

The President of the American Surgical Association, Dr. J. Ewing Mears, Philadelphia, Pa.

Chairman of the Executive Committee, Landon Carter Gray, M.D., New York City.

Secretary, William H. Carmalt, M.D., New Haven, Conn.

Treasurer, John S. Billings, M.D., Washington, D. C.

THE HOTEL RICHMOND invites the attention of the Congress to its admirable situation and appointments for all that is most desirable for comfort, and convenient for members and the ladies who may accompany them, who, in conjunction with the best hotel accommodations, would avail themselves of the most convenient point of departure for seeing everything that a visitor would like to see in Washington at this most delightful season. Our own personal knowledge of Major Coleman's hostelry corresponds with that of the always delighted companionship of other guests who are ever wont there to meet. See the Major's announcement on another page.

F. MONTIZAMBERT, M.D., Edin., F.R.C.S., D.C.L., has been appointed, by the Government of the Dominion of Canada, General Superintendent of the Canadian Quarantine Service.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES will hold its fourth annual meeting in Washington, D. C., May 1st, 2d, and 3d, 1894.

This national organization is composed of medical officers of the U. S. Army, U. S. Navy, National Guard of the United States, and the Hospital Marine Service, in whose service are many of the most celebrated and distinguished surgeons of our country. A brilliant and able literary programme will be presented. The afternoon of one day will be set apart for an object lesson from the "Manual of Drill," by the Hospital Corps. The evenings will be given up to social entertainments. There will be about five hundred delegates in attendance.

GEORGE HENDERSON,
Chairman Committee of Arrangements.

WASHINGTON, D. C.

INTERNATIONAL HYGIENIC CONGRESS.—The eighth International Congress of Hygiene and Demography will be held next September at Buda-Pesth. The Executive Committee of this Congress at its last meeting finally arranged the time and the order of transactions of the Congress. According to this arrangement, the usual preliminary or introduction meeting of the members will take place September 1st. The formal opening of the Congress is fixed for September 2d, and the meetings of the various sections for the transaction of their special work will be held on September 3d, 4th, 5th, 7th, and 8th. The closing meeting will be held on September 9th.

In connection with the Congress a hygienic exhibition will be arranged, which will differ essentially from similar undertakings, in so far that it will not be a trade or industrial exhibition, but will contain only such objects as may serve to illustrate the questions forming part of the scientific programme of the Congress and to facilitate their study.

One of the principal and most interesting parts of the proceedings of this Congress will be an important discussion on diphtheria, which is arranged to take place on the fourth day of the meeting. Dr. John Billings, of New York, is the representative of the Congress in this country.

THE AMERICAN SANITARY ASSOCIATION is a new organization, organized in 1893. Its objects are stated to be:

To aid in the maintenance of public health; to discourage the manufacture and sale of impure and injurious foods and medicines; to encourage the introduction of wholesome and honestly manufactured articles of foods, medicines, clothing, and sanitary appliances in general; to examine and certify as to the character of foods, medicines, and sanitary appliances; to distribute for the benefit of the general public, information concerning sanitary matters.

Medical men, sanitarians, and others interested in public health are cordially invited to become members. The enrolment fee is $2. Annual dues, $1.

For full particulars address the secretary,

W. THORNTON PARKER, M.D.,
Groveland, Mass.

THE SANITARIAN.

MAY, 1894.

NUMBER 294.

THE ADULTERATION OF FOOD.*

By H. W. WILEY, Chemist of the U. S. Department of Agriculture.

BARNUM made a colossal fortune by acting on the principle that Americans like to be humbugged. There is something soothingly seductive in being led to the circus by lurid posters showing unattainable attitudes of impossible monsters. This attractiveness is increased by the knowledge that, like the limited express, it implies an extra charge. The public would rise with unanimous execration were it to attend a circus where side shows were not known and the *post ludum* concerts were free. Were the feats of legerdemain of the mystic Hermann actual performances of supernatural powers, they would lose for us half their charm. To be cheated, fooled, bamboozled, cajoled, deceived, pettifogged, demagogued, hypnotized, manicured and chiropodized are privileges dear to us all. Woe be to that paternalism in government which shall attempt to deprive us of these inalienable rights. There is no point on which the average American is more sensitive in respect of legal restriction than in those instances in which the law interposes to prevent him from making a fool of himself. Only after a long struggle has a distinguished citizen of your city, now in public life, been able to prevent the mails from paying the expenses of the delta of the Mississippi. Only the other day, in New Orleans, I read in the lottery advertisement that the ticket drawing the last capital prize of $75,000 had been sold in Washington, Philadelphia, and Kalamazoo. This all doubtless comes from the fact that in this country each one of us is just as good as the next—a condition of

* A lecture delivered before the Franklin Institute.

affairs which, in true Gilbertian humor, has been touched off in the distich :

" When everybody's somebody,
Nobody's anybody ;"

therefore we should not be surprised at the pertinent inquiry of why A, being no better than B, should interfere with B when B wants to get drunk or buy a lottery ticket.

In regard to the character of what we eat and drink, we find the same unwillingness to be watched over and protected.

A few days ago in Chicago I went out to the Union Stock Yards to look at the process of meat inspection. From each carcass of pork intended for exportation is taken a sample of the flesh, and this is carefully examined for trichinæ. " Do you often find diseased samples?" I asked. " Yes," said the attendant, " from one to two per cent of all the samples examined is found infected." " Could I see a sample of that kind?" " Certainly. Has any one a trichinosed sample in the microscope?" A pretty girl microscopist held up her hand. I looked and saw for myself the curled and coiled serpent ready for a strike. How I congratulated that lucky sarcophagus Teuton who had been saved from a horrid death by the fairy fingers and sure blue eyes of the trichinæ girl. " What do they do with these infected carcasses?" A shrug of the shoulders led me to believe that they were sent to soap factories as they doubtless are, and this was followed by the expression, " But Americans don't eat raw pork ;" and I am led to suppose from this that trichinæ are really very good and nice when well broiled. Next morning, when I ordered ham for breakfast, I asked the waiter to have it cut thin and broiled crisp. Even then when it was brought in I could not help thinking that it looked like a bretzel.

That distinguished jurisconsult and patriot, Senator Paddock, of Nebraska, during the first session of the present Congress, after years of futile struggle, succeeded in having the Senate pass what is known as the Pure Food Bill ; but it seems from the provisions of this bill that the Congress of the United States has only power to protect the foreigner, the disfranchized and the Indian not taxed. The provisions of the bill are confined to the Territories and the District of Columbia and to interstate commerce. Mild as are the penal-

ties of the bill, allowing the citizens of any State to make a dessert and call it peas if they like, yet it has been left unpassed in the House of Representatives.

The Paddock Pure Food Bill, to summarize it briefly, has for its purpose the protection of commerce in food products and drugs between the several States, the District of Columbia, the Territories of the United States and foreign countries, and the Secretary of Agriculture is authorized to make the necessary rules for carrying out the objects of the bill. He is authorized to cause to be punished, through the proper courts, any one introducing in any State or Territory, or the District of Columbia, or from any foreign country any article of food or drugs which is adulterated or misbranded. The act says that the term "food" shall include all articles used for food or drink by man, whether simple, mixed or compound. In the case of food or drink, an article shall be deemed to be adulterated if any substance or substances has or have been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product when offered for sale shall be calculated to deceive the purchaser; further, if it contain any inferior substance or substances substituted wholly or in part for the article, or if any valuable constituent of the article have been wholly or in part abstracted, or, if it be an imitation of, and sold under the specific name of, another article, or if it be mixed, colored, powdered or stained in a manner whereby any imperfection therein shall be concealed, or if it contain any added poisonous ingredient or any ingredient which may render such article injurious to the health of the person consuming it. Further, the food is declared to be adulterated if it consist of the whole or any part of a diseased, filthy, decomposed or putrid animal or vegetable substance or any portion of an animal unfit for food, provided that an article of food shall not be considered adulterated if it be a mixture or compound sold under its own distinctive name, or an article labelled, branded or tagged so as to plainly indicate that it is a mixture, compound, combination or blend.

It will be seen by the above provisions that the bill is very far-reaching in its character; and it contains also the proper penalty for enforcing its operation. This bill passed the United States Senate on March 9th, 1892. Mr. Paddock, in

concluding his speech in advocacy of the bill, used the following words :

" In the name and in the interest of public morality, I appeal to you to set legislative bounds, beyond which the wicked may not go with impunity in this corrupt and corrupting work. Let us at least attempt to perform our part in the general effort to elevate the standard of commercial honesty which has been so disgracefully lowered by these deceptions, frauds and robberies, the malign influence of which is everywhere present, everywhere felt.

" Let us help by our action here to protect and sustain in his honorable vocation the honest producer, manufacturer, merchant and trader, whose business is constantly menaced and often ruined by these unscrupulous competitors, who by their vile and dishonest arts, manipulations and misbrandings are able to make the bad and impure appear to be the pure and the genuine ; thus, by a double deception, both as to quality and price, making the worse appear the better choice to the unintelligent mass of purchasers.

" In the interest of the great consuming public, particularly the poor, I beg of you to make an honest, earnest effort to enact this law. At best a great multitude of our people are oppressed by a fear, a never-absent apprehension, which they carry to their work by day, and to their beds by night, that perhaps at the end of the following day, or week, or month, their ends may fail to meet. Under the strain of this grim menace life itself becomes a burden almost too grievous to be borne. But the thought of helpless wife and children, whose sole dependence he is, renews the courage of the wage-worker from day to day, and so he struggles on, praying and hoping to the end.

" These, Mr. President, are the men, and these the women and children, for whom, before all others, I make this appeal. If you could save to these the possible one third of the nutritious element of their food supplies which is extracted to be replaced by that which is only bulk, only the form and semblance of that of which they are robbed by the dishonest manipulator and trader, you would go a long way toward solving the great problem of the laboring masses—whether for them it is ' better to live or not to live,' whether it is

better to bear the ills they have, rather than fly to others that they know not of, that lie beyond in the realm of governmental and social upheaval and chaos.

"There is a good deal in the way of comic 'asides' as the momentous social drama which holds the boards at this time, and whose *dramatis personæ* are the so-called common people, rapidly advances to the epilogue. Be not deceived! the storm doth not abate. It is ever rising. Its violence is ever increasing. Take heed when the people demand bread that you continue not to give them a stone, lest the angry waves of popular discontent may some time, perhaps in the near future, rise so high as to overwhelm and engulf forever all that we most greatly value--our free institutions, and all the glories and hopes of our great republic—which are not ours alone, but which belong—and, if they are preserved and shall permanently endure, will be an ever-continuing blessing—to all mankind."

This Pure Food Bill has received the unanimous support of nearly every agricultural organization in the United States. It has been opposed by a number of manufacturing establishments interested in the production of drugs and mixed foods, and also by those largely interested in the manufacture of substitutes for lard. If adopted it can at once be seen that it would do away with the necessity of the oleomargarine law, which is a special form of legislation, and, like all special legislation, must be open to many objections.

As before stated, the national law, as indicated above, does not protect the citizen of any State against an adulterated food which is manufactured and sold within the State. Such police power must be left wholly to the several States. Many of the States already have laws on their statute books dealing with the subject of food adulteration. These laws, however, are for the most part inoperative, and, not being based on a common plan, would naturally not secure, even when fully enforced, the same degree of protection in all States. What is needed for a complete legal protection of the people against adulterated foods is not only the enactment of the Paddock Pure Food Bill, but a similar enactment of similar scope and aim for each of the several States.

Among the various States which have laws on the subject

may be mentioned Illinois, which has an act to prevent and punish the adulteration of articles of food, drink and medicine, and the sale thereof when adulterated. There is also a special law preventing the adulteration of butter and cheese.

Iowa has a statute entitled an act to prevent deception in the manufacture and sale of imitation butter and cheese. One of the provisions of this law is that no keeper of a hotel, boarding-house, restaurant or other public place of entertainment shall knowingly place before any patron, for use as food, any imitation butter or imitation cheese unless the same be accompanied by a placard containing the name in English of such article printed in plain Roman type. Iowa also has a special law in regard to the adulteration of milk.

Maine has a food law to prevent the manufacture and sale of adulterated lard. Maine also has a general law on the adulteration of food and drinks.

Maryland has a statute to provide for the prevention of the adulteration of articles of food and drink and the sale thereof when adulterated or unwholesome. The enforcement of this law is placed largely in the hands of the State Board of Health.

Perhaps the best of the State laws concerning adulteration are those of Massachusetts, the statutes of which provide "that no person shall, within this commonwealth, manufacture for sale, offer for sale, or sell, any drug or article of food which is adulterated within the meaning of this law." The law of Massachusetts is, in all essential particulars, that of the Paddock Pure Food Bill—of course with such variations as are necessary in the enactment of a State law as compared with a federal law. The law of Massachusetts is especially effective as regards the sale of adulterated milk and other adulterated food, and has a system of State inspection which has already reduced the percentage of adulteration of such articles to a very low figure. Monthly returns are made by the inspectors and analysts of foods and drugs. The report for the month of October—which is the latest one—contains the results of the inspection of milk, butter, cheese, olive oil, vinegar, spices, cream of tartar, molasses, maple sugar, maple syrup, honey, tea, coffee, confectionery and miscellaneous articles and drugs. The total number of samples examined was 610; the number found to conform to the legal standard

was 428, and the number of samples varying from the legal standard—that is, adulterated within the meaning of the act, 182. The percentage of the adulteration was 29.8. The actual percentage of adulteration is very much less than this, for it is only suspicious articles of food to which the attention of the Board is directed. Certain staple products, such as sugar, flour and the various cereal products, are very rarely adulterated, and receive but little inspection. The work of the Board is, therefore, mainly devoted to the inspection of such articles as have been found, by several years of experience, to be especially liable to adulteration. Eleven actions were brought in the courts during the month for violation of the Food and Drugs Act. Five were for the violation of the statute relating to the sale of milk; two of coffee; one each of honey, cream of tartar, cloves and pepper. In all of the eleven cases conviction followed, and fines of $247 in all were imposed. The cities and towns from which samples of food were collected during the month were Boston, Worcester, Lowell, Cambridge, Springfield, Lawrence, Somerville, Salem, Chelsea, Malden, Newton, Taunton, Waltham, Pittsfield, Brookline, Charlton, Greenfield, Hyde Park, Lee. Marblehead, Milton, Natick, North Adams, Orange, Stoneham, Stoughton and Ware.

The case of Massachusetts is given somewhat at length on account of the excellence of the system of inspection. It shows what a State law can accomplish when wisely made and honestly enforced. In the one item of milk alone, it would be difficult to estimate the amount which has been saved to consumers by the strict enforcement of the law which requires the milk sold to contain a certain amount of total solids and fat.

Time remains only to mention the other States which have laws of some kind on the subject of adulteration. These States are Michigan, Minnesota (which has a series of good laws, both special and general), New Hampshire, New Jersey (which also has a good system of laws), New York, Ohio (also with a fairly good system) and Pennsylvania, which divides its law into three sections; the first relating to liquors—I suppose because this is the most important of the foods of this State—the second to food adulteration in general, and the third especially to dairy products. The weakness of the Pennsyl-

vania law is not so much in the character of the provisions relating to the sale of foods as in the method of securing their enforcement. It does not provide for any system of inspection as does the law of Massachusetts; and no law relating to the adulteration of food is of any value whatever as a protection to the community unless a rigid system of constant inspection is provided for. The Pennsylvania law declares that the addition of water or of ice to milk is an adulteration, and any milk obtained from animals fed on distillery waste is declared to be impure and unwholesome. The removal of the cream is also declared an adulteration. The law prevents the manufacture of any substance provided to take the place of pure butter fat. This is not a restriction on the sale of an adulterated butter, but is a total prohibition of the manufacture and sale of any substitute for butter, even if it be sold under its own proper name.

Continuing the list of States with laws against the adulteration of food, we have next, Virginia and Wisconsin. The latter State has a very good law, which not only has a general provision, but also enters into detail, especially in regard to dairy products, describing what shall be considered pure milk, or establishing a standard thereof, and stating how an adulteration of milk shall be proved, and how adulterated honey shall be marked. It contains penalties for the sale of unwholesome provisions and items in regard to the adulteration of foods and drugs, fraud in dairy manufactories, the form of label to be placed on dairy products, the strength of vinegar, etc.

It is hardly patent to this lecture to refer to foreign countries, but it may be said that in general the best laws in this country, national and federal, are based on the English food and drugs act, which is entitled an act to make better provision for the sale of food and drugs in a pure state. This became a law on August 11th, 1875.

The laws of the continental countries of Europe are also in the main effective, but contain such a multitude of minutiæ as would render them very burdensome if enacted in this country. The English law has been in operation long enough to prove its efficiency, and under it hundreds of convictions for the sale of impure foods and drugs have been secured.

The Canadian law is essentially the same as that of England, although not so comprehensive.

The States not mentioned in the above list have, so far as could be ascertained, no laws relating to the adulteration of foods. At least they were not reported, although inquiries were sent to the Secretary of State of each State in the Union for information in regard to this matter.

Many municipalities also have local laws applying to the sale of adulterated foods. These laws are mostly of a specific nature and apply chiefly to dairy products. There would be no time here to even mention the cities having local laws on this subject, but there are now very few large cities in the country which do not at least have some kind of milk inspection.

Lying at the root of the question of food adulteration is the inquiry, What is meant by pure food? In the laws which have been enumerated, attempts have been made to legally decide what pure food is. Divested of all legal technicality, pure food is a wholesome article of food or drink which is sold and consumed under its proper name. With each particular article there must be established a separate standard which a consensus of experience with a great number of known pure substances in that list shows to be required. For instance, take the case of milk, which is one of the most common articles of food and perhaps has been more generally adulterated than any other one. Analyses made all over the world on hundreds of thousands of samples of healthy cow's milk have shown that the average content of solids therein is practically nearly thirteen per cent. A normal milk which falls below this standard shows some peculiarity in the animal giving it—either an incipient disease, deficient nutrition or some idiosyncrasy. The mixed milk of a herd of healthy animals will rarely fall below this standard. For this reason the standard of twelve and one half per cent of total solids in milk has been adopted in most countries having laws on the subject. In some cases the benefit of the doubt is given to the vendor, and a standard is fixed at twelve per cent. Now, of these total solids a certain quantity in normal milk must be butter fat. It is not often that the butter fat of a perfectly healthy cow's milk falls below three per cent of the

total weight of the milk. It is much more apt to be three and one half per cent; hence, in fixing a standard of pure milk, not only must the percentage of solids be given, namely, twelve or twelve and one half per cent, as the case may be, but also the quantity of fat contained therein. This percentage varies in different laws from two and three fourths to three and one half per cent.

In a similar method the standard of purity of any other article of food must be determined by a careful examination of pure samples from all quarters, and by then fixing a standard below which an article must be regarded as suspicious or adulterated.

As a distinction between a pure and an adulterated article, take the cases of butter and oleomargarine. Pure butter, for instance, must be clean, sweet, wholesome and made of the fat of cow's milk, and must contain only a certain proportion of water, curd and salt. Oleomargarine may be as sweet, clean and wholesome as the butter mentioned above, yet when sold as butter it is clearly not pure food, but a spurious article.

Again, when the housewife buys lard it is supposed that the article she obtains has been made from the fat of healthy, freshly slaughtered hogs, carefully selected and cleaned and rendered in clean kettles or tanks. Cotton-seed oil and beef tallow, in respect of cleanliness, nutritive properties and wholesomeness, may equal and even excel pure lard, but the admixture of these articles with hog's lard, or their sale as such without the knowledge of consumers, is clearly a fraud and an adulteration.

From a practical point of view, food adulteration may be considered under two general aspects, namely:

1. Adulteration harmless to health, and practised merely for cheapening the article or making it more attractive to the sight or taste.

2. The addition to a food or drink of substances positively injurious to health.

Such substances are added chiefly as preservatives or for the purpose of coloring or decolorizing, or for the purpose of giving a particular flavor or taste. As a rule, they are added in minute quantities. In fact, the proportion of such substances

is usually so small that a moderate or intermittent use of food so treated may not produce any great injury to the system. The continued use of such articles, however, must end in the impairment of the general health and sometimes in permanent injury.

In the latter class of adulterations must also be included those injurious substances naturally arising from the decay of wholesome foods, or from the development of noxious substances in canned foods, or from the formation of poisonous salts by the action of the canned foods on the solder and tin of cans. Such materials, while not intentionally added, are, nevertheless, adulterations within the true scope and meaning of the term as applied to foods. In other words, it is not necessary to prove intent in order to establish the fact of adulteration. Any food which is not what it purports to be, which contains any unwholesome or poisonous ingredient, or which has any artificial coloring or facing material, is, to all intents and purposes, adulterated.

There is one legal exception to the above classification, namely, the use of annatto in coloring butter. The national oleomargarine law, applied to the Territories, the District of Columbia and to interstate commerce, permits an artificially colored butter to be passed as genuine; and I believe most State laws referring to this subject contain the same provision. Indeed, in some States oleomargarine exposed for sale is required by law to be stained pink or some other color distinctive from yellow, and such a stain, while an actual adulteration, could not be classed as illegal.

There is still another form of fraud in food which may be defined as a negative adulteration. It consists in extracting from a food part of some valuable ingredient, and selling the residue as the genuine article. The sale of skimmed milk for whole milk, and of spent tea leaves for genuine leaves are illustrations of this kind of fraud. Perhaps the best method of illustrating these various kinds of fraud and adulteration will be to call attention to some of the articles sophisticated in the ways described. No attempt, however, will be made to give a complete list of adulterated articles, for such a list would fill a volume. Attention, therefore, will be called only to the more important articles of food, and to those which are

most commonly adulterated. In addition to this, examples will be given of some peculiar forms of adulteration which are little known to the public.

Milk.—Normal cow's milk should contain about three and one half per cent of butter fat, and should yield, on standing in a cool place for twenty-four hours, from ten to twenty per cent by volume of cream. Until the establishment of milk inspection in cities, whole milk was something of a rarity. With careful inspection, such as obtains in Boston, the percentage of adulteration has been largely reduced.

An ingenious method of milk adulteration is sometimes practised by the shrewd husbandman in such a way as to preserve his tender conscience from being seared. The cream in the cow's udder is naturally separated in part from the milk, unless the cow, just previous to milking, be subjected to violent exercise. The first milking, therefore, is less rich in butter fat, and it can be sent directly to the consumer. The last of the milking, called strippings, on the other hand, is nearly pure cream, and can be preserved for butter-making. Butter fat, being lighter than whole milk, cannot be removed without increasing the density of the remainder above the normal. This density, however, can be reduced to the proper limit by the judicious addition of water. The testing of milk by the lactometer alone is therefore not a certain method of discriminating between a pure and an adulterated article.

Condensed milk is made by evaporating whole milk at a low temperature and in a high vacuum, in copper vessels, yet even at this low temperature some of the distinctive aroma of the milk is carried off by the escaping vapors. It therefore happens that even when evaporated milk is diluted to its original volume with water, it is never exactly itself again. Yet a pure condensed milk is not an adulterated article, for it is sold as condensed milk, and hence no fraud is practised. When, on the contrary, as is often the case, sugar or salicylic acid is added in order more securely to preserve the condensed product, then a perfect case of adulteration is established. The manufacturer, however, may relieve himself of all responsibility, in so far as the addition of sugar is concerned, by stating on the label the amount added. In cases of deleterious preservatives, however, there would be no excuse. Their use in all cases should be prohibited.

Butter.—In regard to butter, the character of adulteration is well known. The use of oleomargarine as a butter substitute has been practised for many years. The oleomargarine law, which imposes a tax of two cents a pound on the manufactured product, has not helped to restrict its use, but has rather increased it by giving to the consumer a guarantee of purity. The amount of tax collected on manufactured oleomargarine for the fiscal year ending June 30th, 1892, was $945,675, which shows that there were 47,283,750 pounds of oleomargarine manufactured in the United States in twelve months.

The number of retail dealers in oleomargarine increased during the year more than twenty-five per cent over the preceding year. The amount of tax paid by retail dealers for the fiscal year ending June 30th, 1891, was $146,293.70, and for the fiscal year ending June 30th, 1892, $204,215.

The increase in the number of wholesale dealers was nearly one hundred per cent. The amount of tax paid by wholesale dealers for the fiscal year ending June 30th, 1891, was $53,191, and for the fiscal year ending June 30th, 1892, $106,036.

There can be no reasonable objection to the use of oleomargarine; it is clean, wholesome and digestible. When it is to be kept for a long time before use, as on ship board or in distant mining camps, it is preferable to butter, because it has but little tendency to become rancid

Lard.—For similar reasons there can be no possible objection to the use of cotton-seed oil as a substitute for lard or when mixed with lard, provided it be sold for what it is. Most of you are familiar with the great fight which was made against the use of the term "pure refined lard," which was the trade name of a mixture of lard stearine with cotton-seed oil. "Pure refined lard," it was claimed, was a term which had been used so long to designate the mixed product that it had become in reality a trade-mark, and was, therefore, entitled to respect and protection. In the investigation which was held before the Congressional committees, it appeared that as to the trade the contention was quite justifiable. Goods sold under that name were understood to be mixed. When, however, the mixed product was offered to the consumer, it was purchased with the idea which the name naturally implied, that an extra fine quality of hog's lard was secured.

All attempts to pass a pure lard bill, modelled on the Oleomargarine Act, have heretofore failed in Congress; but several of the States have prohibited the sale of mixed lard except when offered under the proper name. Manufacturers have, therefore, been gradually forced to abandon the term "refined lard" when applied to this commodity.

I am of the opinion that many persons would prefer a cooking fat largely of vegetable origin to a pure animal product. To me it seems that some State Legislatures have taken a reprehensible course in prohibiting the sale of vegetable oils as a substitute for lard for cooking. The grower of hogs undoubtedly has a right to contend against the sale of vegetable oils as hog fat; but when he pushes his claim still further and demands that the markets be closed to products as pure and nutritious as his own, he passes beyond the bounds of public support. Every person in the United States who prefers cotton oil to lard should be allowed to purchase his supplies without let or hindrance. Every grower and maker of pure laid has the right to an equally open market, from which every adulterated and mixed lard, offered as pure, should be rigidly excluded.

For a time, a few years ago, when a popular fad prevailed in favor of nitrogenous foods, the true value of fats to the digestive and nutritive economy was not well appreciated. At the present day this is all changed, and we know how to value a fat properly.

It is therefore a matter of no mean importance to protect the public in the use of olive oil instead of cotton oil, of cotton oil instead of lard, and lard instead of a mixture of beef and cotton-oil stearine. It is true that cotton oil, when carefully refined, is almost as good a salad dressing as olive oil, but it is very much cheaper, and those who prefer to pay the high price should be secured against fraud. In respect of wholesomeness and digestibility it would be hard to choose wisely between the two.

One of the great difficulties in securing the enactment of a National Pure Food Bill has been the feeling in cotton-growing regions that such a bill would restrict the market for cotton oil. This is true if the fraudulent market is meant. By that I mean the surreptitious sale of cotton oil as olive oil and

as lard. But such a bill would not interfere in the least with the legitimate market for this product. Cotton oil as a food has such merit of its own as to warrant the belief that it does not require any smuggling to secure for it a wide and rapidly increasing use. The South as well as the North would be the gainer from honest markets for honest foods, and it is a short-sighted policy that leads to a crusade against such legislation as will secure the desired result. It would be a rather unfortunate thing for the whole country should an irrepressible conflict between the *sus* and the *gossipyum* keep our interstate market forever open to mixed or doubtful fats.

Sugar.—The common idea that the grocer puts sand in his sugar is not borne out by the facts in this country. I doubt whether a single pound of white sand has been put into the sugar supply of this country in the last ten years. It is one of those popular fallacies which gain credence inversely proportional to their truth. The granulated and white lump sugars which are found in our markets are almost absolutely pure ; as pure indeed as the utmost care in manufacture can make them. Occasionally a little flour or starch may find its way into the powdered sugar, but such instances must be exceedingly rare. Low-grade sugars contain molasses and water as a result of the way in which they are made and dried. In the refineries, after the pure white sugar has been secured, the molasses therefrom is reboiled and a second crop of sugar crystals obtained. These form the so-called coffee sugars of commerce. In a like manner a third crop of rather light-colored crystals may often be formed. By a combination of low temperature and high vacuum in boiling, and by a manipulation producing small crystals, a sugar can be made very soft, and, so prepared, it absorbs a good deal of the mother liquor in which its crystals grow. It is possible, in this way, to put on the market a fairly light-colored and attractive sugar, which may not contain more than eighty-five per cent of pure sugar. This process of making low-grade sugars is practised chiefly with the product of the sugar cane. In sugar from beets the molasses and mother liquors are usually so highly charged with alkaline salts as to render the manufacture of low-grade sugars, fit for table use, a very difficult matter. In this country, as is well known, the greater part of

the sugar consumed is made from sugar cane. Of the 4,000,000,000 pounds which we have eaten in the last twelve months, probably 3,500,000,000 have been grown under tropical suns. The proportion of yellow, coffee and low-grade sugars offered is, therefore, greater in our markets than in Europe, where the sugar beet supplies nearly all of the sugar consumed.

Syrups.—In respect of molasses and syrups the bill of health is not quite so clean. The quantity of pure maple syrup sold annually is well calculated to make the maple forests of Vermont prick up their ears. A very little maple molasses mapleizes the whole jugful—a fact that makers and sellers have not been slow to learn. An extract of hickory bark imparts a misleading flavor to a syrup made from cane sugar and starch, and a patent has been granted by the United States protecting the discoverer of this process in the exercise of his invention. Judicious mixtures of glucose, sugar, syrup and maple flavor are the secrets of the marvellous expansiveness of maple molasses between the tree and the gullet.

"Golden drips," "honey syrups," etc., are names given to compounds made of refinery refuse, glucose and centrifugal cane molasses. The great base of all our table syrups is glucose made from corn starch. I am far from denouncing glucose as a dangerous ingredient in such mixtures. On the contrary, when glucose is properly made, it is both palatable and wholesome, but its sale as maple molasses or as refiner's syrup or as open kettle molasses is clearly fraudulent.

Honey.—Liquid honey is very largely adulterated with glucose. Of five hundred samples of honey bought in fifteen large cities and examined by the Chemical Division of the United States Department of Agriculture, nearly forty-five per cent were found to be fraudulent. Of comb honey, only that is adulterated which comes in bottles or jars. A few years ago there was a popular impression—which I shared—to the effect that comb honey in the frame was adulterated; but no sample of this kind has ever come under my observation, and I am convinced that such a species of adulteration does not exist. Perhaps there is no class of food producers in the country whose business has been so seriously injured by adulteration as the bee-growers. Many of them, however, do not

seem to realize the magnitude of the frauds which are perpetrated against them. They have often been known to denounce, as attempts to injure their business, the statements that such frauds are practised. Of late, since indubitable evidence of fraud has been presented to them, they have determined to use every means to end it.

Coffee.—Almost equally subject to adulteration is ground coffee. The high price of coffee is a special incentive to sophistication. In former days it was largely the custom to buy the green berry, and each consumer would do his own roasting. Now it is fashionable not only to buy the roasted berry, but also to buy it in a ground state. Chiccory, roasted peas, beans, etc., are often found in large proportions in such preparations, and in fact it is somewhat rare to find a pure ground coffee. It might be held that such sophistication would end with the ground article, but such is not the case. The berries themselves have been imitated both in the green and in the roasted state. The moistened mass of chiccory, starch, pea meal, caramel, molasses, etc., is moulded into the proper shape, and, when dried, these imitations might easily escape detection when mixed with the genuine berries. Those who are so fortunately situated as to be permitted to live at home and regale themselves each morning with an aromatic cup of Mocha or Java, scarcely realize what it means to drink a lukewarm concoction of chicory and pea meal, bluish black in color, but decidedly yellow in flavor.

Tea.—Thanks to our customs laws very little tea is found in this country adulterated with foreign leaves. The chief adulterations practised with tea are found in the use of spent leaves and in the practice of facing. The practice of facing consists in treating the leaves with some preparation designed either to increase their weight or to improve their appearance. Salts of iron and copper are often used for this purpose. Some of these facing materials are quite prejudicial to health, and such teas are best excluded from the breakfast table.

Cocoa.—Cocoa and chocolate are largely adulterated with starch and sugar, harmless in themselves, but far cheaper than the meat of the *cocoa theobroma*. The natural oil of the cocoa bean is also often extracted, and its place supplied by a cheaper fat or left without an oil. These various preparations

are offered under fancy names and with wonderful claims of excellence. But in general we may say that the food value of a preparation is not much improved by having it digested before it is eaten. Yet often we see it claimed for a given mixture that it has had all of its difficultly digested components removed and that these are replaced by others with which the gastric juice can have a veritable picnic. The digestible cocoas often belong to this class, and, perchance, may have little of the virtues of the original beans left in them.

Canned Foods.—Of canned foods I should like to say something, but it is difficult to select the little which can yet be said. First of all, the material of which the cans are composed is a matter to deserve attention. It is undoubtedly true that glass is the ideal substance for cans designed to preserve food products. But the first cost of these packages and the danger of breakage during filling and transportation exclude them from competition with tin in all except the choicest brands of preserved foods. Fortunately, tin is a metal which is not only troublesome to the tariff, but also resistant to most organic acids. It is acted on very slowly or not at all by most organic acids found in fruits, vegetables and meats. In some countries, such as Germany, the tin which is used in contact with canned foods is required to be almost pure, and to contain not more than one or two per cent of lead. The most abundant adulterant of tin, as found in tin cans, is lead, and it is against the presence of lead that it is especially necessary to guard, inasmuch as the organic salts of lead, without exception, are poisonous. In this country of personal liberty there is no restriction as to the percentage of lead which tins used for canned foods may contain. We have found as high as twelve per cent of lead in tin from cans which have contained food designed for consumption. Such a high percentage of this dangerous metal cannot fail to excite alarm. We have also found numerous evidences of erosion on the tinned surfaces exposed to the action of the contents of the can. The contact of the preserved goods with solder should also be carefully prevented, inasmuch as solder contains often as much as fifty per cent of lead. It is very common, however, to find lumps of solder in the canned goods and also to find the solder protruding through the points of

union of the can and cover so as to be exposed to the action of the contents.

Copper in Peas.—Equally objectionable is the habit of using copper salts to impart a bright green color to canned peas and other goods. The imported French peas are uniformly colored with copper. The addition of a little copper, in any vegetable which it is desired to keep green when served, has a happy effect in that direction, and fashionable cooks have not been slow to learn this. It is true that the quantity of copper which one would eat in a single meal where French peas are served would not prove greatly injurious, but on that large part of our population who are compelled to dine every day on truffles and peas interspersed with terrapin and champagne, there is great danger of the copper acting with accumulative effect.

I have already spoken of the danger which may lurk in preservatives, such as salicylic acid, but there is also an occasional source of danger in the development of nitrogenous bodies called ptomaines in preserved meats. These bodies may develop with astounding rapidity if a can of meat be opened and not eaten for a day or two. An illustration of the fatality of the action of such bodies is unfortunately often found in the case of tyroxicon, a poison often developed in milk or cream.

The above will serve as illustrations of the more common forms of adulteration to which our foods are subjected. The idea might be formed from this array of facts that foods are almost all adulterated, and that it is extremely difficult to obtain anything pure. Newspapers love to magnify these accounts of adulteration. What I have placed before you has not been for the purpose of exciting a panic on the subject of foods. Much the greater part of foods which Americans eat is pure and wholesome. It is only the small quantity of adulterated food from which we should strive to protect ourselves. This exaggeration of the adulteration of food has been humorously portrayed by Burdette in a little scrap of rhyme, entitled

A VICTIM OF DELUSION.

Placid I am, content, serene.
I take my slab of gypsum bread,
And chunks of oleomargarine
Upon its tasteless sides I spread.

The egg I eat was never laid
By any cackling, feathered hen;
But from the Lord knows what 'tis made
In Newark by unfeathered men.

I wash my simple breakfast down
With fragrant chiccory so cheap;
Or with the best black tea in town—
Dried willow leaves—I calmly sleep.

But if from man's vile arts I flee
And drink pure water from the pump,
I gulp down infusoriæ,
And hideous rotatoriæ,
And wriggling polygastricæ,
And slimy diatomaceæ,
And hard-shelled orphryocercinæ,
And double-barrelled kolpodæ,
Non-loricated ambrœilæ,
And various animalculæ,
Of middle, high and low degree;
For nature just beats all creation
In multiplied adulteration.

Even the conservative work of the Department of Agriculture in investigations of food adulteration, which I have had the honor to conduct during the past six years, becomes most highly sensational material when portrayed in the columns of the daily journal. In the Philadelphia *Star*, of recent date, appeared the following remarkable statement of the work of the Chemical Division:

"Glucose, it appears, is the greatest of all adulterants. It is used for making cheap candy, sugars, jellies and syrups. Apple sauce is pumpkin boiled in cider. It is said that the cheap confectionery and liquors are the articles most injuri-

ously adulterated. Candy commonly contains much fusel oil and other poisons. Strawberry ice cream—a plate of it—often contains almost more fusel oil than five glasses of poor whiskey. It is colored with red aniline dye. Licorice drops are usually made out of candy factory sweepings. Wine is frequently nothing but water with a percentage of crude alcohol from grain or the refuse of beet refineries, colored with burned sugar, flavored with oil of cognac and given an agreeable woody taste with a little catechu. When one buys tea for $1 a pound, one is very likely to pay in reality $2 a pound, because one half the quantity is currant leaves. Grated horseradish is sometimes composed of turnip. Flour is frequently weighted with soapstone. Sweetened water, sharpened with citric and tartaric acids and flavored with the oil of orange skin, makes orange cider. Real honey can be distinguished, under the microscope, by the pollen grains it contains. They have wonderfully beautiful forms, and the very flowers from which the honey was obtained can be identified by the various exquisite shapes of these fructifying germs."

The above startling facts in regard to adulteration, which are attributed to the Department of Agriculture, are worthy of especial notice because not one of them was ever abstracted from any report of the Department. Scarcely a single instance of the adulterations mentioned above has ever been observed and reported on by the chemists of the Department. Thus it is seen that the popular idea of adulteration is really very much at fault, and this has been due largely to the exaggerated statements of presumably honest men who desire to call attention to the fraud and to prevent it by exciting the popular mind against it. The adulteration of our foods and drugs is certainly bad enough, but in my mind it does no good whatever to exaggerate, falsify and misstate the results of careful and unbiassed investigations. As has before been intimated in this address, the remedy against all these things lies clearly in the power of the people. Wise laws wisely administered, a careful system of inspection, a demand for pure food, will secure the people in their right. It is not the rich for whom we should work, but the poor, and they should be protected against frauds in food ; frauds not so dangerous on account of being deleterious to health as because of their pre-

tensions to furnish to the poorer part of our people a food ostensibly pure and nutritious, but in reality valueless. It is not supposed for a moment that any system of legislation can entirely prevent the perpetration of frauds upon the community, but at least these crimes can be made punishable, and their perpetrators may be compelled to endure the penalty of their misdeeds.—*Journal of the Franklin Institute, April*, 1894.

A DOCTOR'S TROUBLES.—"My dear fellow," said my doctor to me, "you have no idea what we have to put up with. If I call to see a patient frequently, I am 'trying to run up a bill;' if I don't, 'it is shameful neglect.' If I manage to get to church, and am called out, I hear afterward, 'Working the Bob Sawyer dodge on Sundays, eh, doctor?' If I am so busy that I cannot go, I am sure to be asked, 'How is it that you doctors are all atheists?' If my wife calls on people, 'it is because she is trying to get patients for me,' but if she doesn't, it is because she is 'too stuck up.' If I cure a patient quickly—get credit, you say? oh, dear, no!—the patient 'wasn't half as bad as the doctor tried to make out; why, he was quite well in a week;' but, on the other hand, should the case develop serious complications, 'Ah! the doctor never understood the malady; in fact, he was worse when he had been taking the medicine a week than when we called him in.' If I suggest a consultation, it is only because I don't know what is the matter; if I pooh-pooh the idea as unnecessary, I am 'afraid of showing my ignorance.' I am expected to, so to speak, cast a horoscope on a baby's life, and tell its mother what its ailments will be. If I can't do that, I 'cannot possibly know very much.' I am expected to foresee all the 'ills that flesh is heir to' six months before they come. I once lost a patient whom I had treated for influenza, because I did not foretell an attack of rheumatism which came on three months later. In all cases, if they get worse, the fault lies in the medicine; if they get well, it is 'the goodness of Providence.' If I send in my bill, they say, 'he is in a terrible hurry for his money;' if I don't, it is 'so unbusiness-like.' 'But we get well paid?' do you say. My dear sir, if I received payment for one half I do, I should die from shock."—*Medical Record.*

DANGEROUS PRACTICES ON THE ISTHMUS OF PANAMA.

THE DISTRIBUTION OF DISEASE BY ISTHMIAN PRACTICES; OR, THE DIRECT RESPONSIBILITY OF COLUMBIA, S. A., ON ACCOUNT OF THE INTERMENT AND DISINTERMENT OF THE DEAD ON THE ISTHMUS OF PANAMA.*

By WOLFRED NELSON, M.D., F.R.G.S.

THE title of my paper may excite some surprise; but that which follows, I believe, will justify it; and if this contribution shall lead to an investigation and verification of my statements, my efforts will not have been made in vain.

When I reached Panama in May, 1880, during an epidemic of yellow-fever, the burial of the masses in the *Campo Santo* and the regular disinterment of them were practices sanctioned by forty years of uncriticised freedom.

Apart from the old-time *bovedas* (of which more anon), the small *Campo Santo*, or "God's Acre," was on the left of the road leading to the *Boca del Rio Grande*. For fully forty years previous to the time referred to the masses, after death, were buried in that small enclosure. It was less than an English acre in extent—nearer three quarters of an acre, I should say. Year after year the same ground was dug over and over again to make way for new tenants. Coffins were seldom used. A coffin at Panama is deemed a positive luxury by the masses. In the few instances where coffins were used, they were turned out when the ground they occupied was needed, together with their contents, under a fierce tropical sun.

The practice then was, and is now, to rent a coffin—called by the French, in happy phrase, *cerceuil d'occasion*. The coffin was carried by friends to the *Campo Santo*. There the body was taken out and lowered into the grave wrapped in its wind-

* Read in the Section on Hygiene, Climatology, and Demography of the Pan-American Medical Congress, Washington, D. C., September 8th, 1893.

ing-sheet. The coffin, having earned *dos soles*, or $2, was taken back to the undertaker's in the city of Panama to spread new disease.

The soil of that cemetery had my close attention. It was largely argillaceous, or clayey, mixed with sand—a soil the absorbent power of which is of the lowest. To repeat, for fully forty years a highly remunerative business had been done in burying and disinterring bodies there.

Having faced an epidemic of small-pox and yellow-fever, together with the late Mr. John Stiven, of Panama, I joined with him in denouncing the practice in the *Star and Herald of Panama*, in English, and in *La Estrella de Panama*, in Spanish, each of us making a plain statement of the facts over our respective signatures.

The articles created a profound sensation. The President of what was then the Sovereign State of Panama (it has since been deprived of its sovereignty, and to-day is a federal department, ruled from the national capital, or Sante Fé de Bogota) was Don Damaso Cervera. He promised the Board of Health of the State—from which I had resigned, in common with Drs. Iturraldi and Nouel—that the practice of disinterring the dead should stop. In the mean time the very large mortality incident to the work on the Panama Canal, directed by the leading *undertaker* of the century, Count Ferdinand de Lesseps, had made necessary the opening of a new cemetery. This new burial place was within one hundred and fifty feet of a narrow glen or valley, in which were two old-time Spanish wells, dug down for fifty or sixty feet below the level of the five cemeteries there, called respectively the *Campo Santo*, the New Cemetery, the Jewish Cemetery, the Foreign Cemetery, and the Chinese Cemetery, situated beyond the new one. Incredible as it may seem, water—literally cemetery drainage—was taken from these two wells and sold by *aquadores* in the city of Panama for drinking purposes. In our published articles we denounced the wells. The President promised that the selling of the water taken from them should cease.

For a time the disinterment of the dead was discontinued, since there was ample room in the New Cemetery; but the water from the wells was sold as formerly. The old-time cem-

etery, after four decades of fertilization by thousands of bodies, became green with grass, and forgotten as far as the lay mind was concerned. Soon the New Cemetery, in spite of its great size, was wholly filled, row after row of graves, each marked by a plain cross bearing a number and a date. The concessionaire, Don Nicanor Obarrio, then and now—he owned the wells and had a money-making undertaking establishment near by them—began burying bodies in a large field just back of a line of new *bovedas* in the New Cemetery—these *bovedas* being a line of vaults or niches running parallel with the main road, or that already referred to as leading to the Boca. The construction of the *bovedas* I shall refer to later. Midway in the section of *bovedas* was an opening in the masonry and a gateway leading to the field in question. Therein the energetic and enterprising Señor Don Nicanor Obarrio placed the New Cemetery's overflow.

But here pray pardon a glance backward. Adjoining the *Campo Santo* was a vast quadrangle in stone—the old-time *bovedas*. It had an entrance on the main road, and one directly opposite, leading into a field lying toward the Bay of Panama. Within that stone enclosure were four sides of a square, all in masonry, or three tiers of openings, each large enough to admit the coffin of an adult. When the coffin had been placed within, the aperture externally was closed by brick-work and cement, or by a slab of marble, on which was the usual inscription: "To Fulano de Tal," or "To Dona Anita," as the case might be. Rent for these burial niches had to be paid in advance for eighteen months. At the end of that time, if new rent was not forthcoming, a Columbian eviction was in order. The coffin and its contents were taken out of the gate leading to the field and there dumped. Occasionally, when the pile became too large, it was burned.

The *bovedas* system is used by the best classes of the isthmus. In the Foreign Cemetery, the fifth in that locality, bodies are buried in the earth, there to stay.

In some instances in the case of bodies laid away in the niches of the *bovedas*, the rent required was renewed; but very few of the dead in that quadrangle were left in peace. But eviction was the rule. The majority, like their poorer brethren over the way, were transients.

So much for the *bovedas* system, as it is operated at Panama to this present day and hour.

To return, briefly, to the New Cemetery: It was opened in July, 1884. The ground was consecrated with impressive formalities. A military guard and a band of the *Zapadores* were present, as were also prominent government officials and members of the consular corps. It was a half holiday in the city. The affair took on an air of festivity that I had hitherto failed to observe in cemeteries; the joyousness of a graveyard had failed to impress me in the past.

Between July, 1884, and April 12th, 1886, that New Cemetery had received for burial in the earth 3884 bodies, quite apart from the hundreds buried in the *bovedas*, or niches. Not only had the cemetery been filled, but work was going on in the field in the rear.

As a faithful historian I may say, *inter alia*, that the opening of the annex was unattended by any ceremonial. Panama was making a new record for herself as a pestilential centre. This is not the mere "tale of a traveller." What I have here described continues to this very day and hour. I have official authority for my statement.

I have made reference to the crosses over the graves, the first of which was numbered "1," with the date and "1884." The crosses bore no names. A ledger gave the name of tenant No. 1, represented by a paper cross in my possession. Its centre bears the number "2558," above is the date "1886," below the date "1887," to the left is the date "1889," and to the right the date "1891." What may that mean? Simply that the number of the grave is "2558"—a permanent distinction; in addition, that said grave had four successive tenants from 1886–91. In other words, that the New and Large Cemetery was dug over four times in five years.

In conclusion, I can but add, in the words of a distinguished American—a statesman admired at home and respected abroad—that the state of things in Panama "is a condition and not a theory."

It remains now for this body of sanitarians and scientists to say what the world is going to do about it.

THE SMALL-POX SITUATION IN THE UNITED STATES.

By JOHN H. RAUCH, M.D.

THE following gives the small-pox status of the United States to March 17th, obtained from official and reliable sources:

Two steamers have recently arrived with small-pox: One at the Delaware Breakwater, from Rouen, France; and the other at Boston Harbor, from London. A young lady who arrived on the *Majestic* from Paris was taken sick after her arrival at Brattleboro, Vt., and there was another case in Elk County, Pa.

No immigrants should be allowed to come to this country from Europe without being vaccinated before embarking, owing to the prevalence of small-pox in Europe.

The health authorities should continue to press vaccination, as it will be found that the objections of many will be removed with the milder weather of the next three months. With a more thorough sanitary investigation of the country than obtained twelve years ago, and the exclusion of unprotected immigrants, the epidemic should be stamped out by next December.

MASSACHUSETTS.—Dr. Abbott, the Secretary of the State Board of Health, reports under date of March 14th, as follows:

Cases reported to the Board October, 1893	3
" " " " November, 1893	8
" " " " December, 1893	19
" " " " January, 1894	25
" " " " February, 1894	27
" " " " March 1st to March 14th	14
Total	96

Of this number, 68 were in Boston, 8 in Lowell, 5 in Holyoke, 4 in Worcester, 2 each in Somerville, Brookline and Methuen, and 1 each in Marlboro, Yarmouth, Lawrence, Waltham and Lynn. There were 13 deaths and all unvaccinated. Cannot give the vaccinal statistics at this time. The following, however, for the previous eight years (1885–92 inclusive), is worthy of note :

No. of deaths from small-pox reported to the Board.....	28
" cases of " " " "	124
" deaths among the vaccinated.....	3
" cases " " "	50
Percentage, 6 per cent.	
" deaths among the unvaccinated.....	17
" cases " " "	49
Percentage, 34.7 per cent.	
" deaths among the doubtful or unknown (as to vaccination).....	8
" cases among the doubtful or unknown (as to vaccination).....	25
Percentage, 32 per cent.	

The only points in the State where cases exist are Lawrence, Yarmouth, Lynn, Waltham and Boston. At the four first named there is only 1 case, and there are now in Boston only 17. In the latter part of February a number of cases were found in South Boston, and as there seemed to be a tendency to spread, the Board of Health promptly organized a vaccinating corps of fourteen physicians, who made a house-to-house inspection in the infected districts, vaccinating all who were not protected by recent vaccination, and at this time it may be said that the disease is under control. Vaccination is compulsory in Massachusetts.

CONNECTICUT.—In December, 1893, there were 7 cases in the town of Winchester. Of these 5 were treated as chicken-pox ; the 2 following cases were recognized as small-pox. In January, 10 other cases occurred in the town, and then it spread to the adjoining towns of Norfolk, where there were 3 cases, and to Canaan, where there was 1 case. On January 3d, a case was reported in New Haven. No spread from the three last points, so far as known. In Waterbury a case

was found on February 17th, and another on the 26th. Last week a man suffering from small-pox took a New York train at South Norwalk. Much consternation was created on the train, and upon arrival at New York the patient was taken in charge by the health authorities.

NEW YORK.—Small-pox now exists at Red Hook, Tivoli, College Point, Walworth, Manchester, Ontario, Yonkers, Utica, and Sing Sing Penitentiary.

NEW YORK CITY.—Cases in hospital January 1st, 18; February 1st, 40; March 1st, 64; March 3d, 56; March 10th, 50; March 17th, 43. Cases reported for the week ending January 6th, 11; January 13th, 11; January 20th, 22; January 27th, 22; February 3d, 22; February 10th, 23; February 17th, 23; February 24th, 29; March 3d, 30; March 10th, 28; March 17th, 26, making a total from January 1st to March 17th of 239 cases. From the foregoing it will be seen that the New York Board of Health has held the disease in check under very difficult circumstances, and it now looks as if it was under control, and that the number of cases will continue to decrease.

BROOKLYN.—In January there were 70 cases of small-pox reported; February, 65, and to March 17th, 71, making a total of 206 since the beginning of the year. This increase is mainly owing to a nest of small-pox found on March 1st, and perhaps to the demoralization of the Health Department incident to a change of administration. The Health Commissioner is acting energetically, and on the 10th inst. established eight vaccinating stations, where the poor can be vaccinated free of charge. Others will be opened as soon as possible; and we have no doubt, with the other precautions taken, that about April 1st the disease will begin to decrease. There are now about 60 cases in the city. There has been a slight increase during March in infected points throughout the State.

NEW JERSEY.—There is 1 case at Hoboken, and 3 at Jersey City, and several convalescents in the Hudson County Pest House. In 1893 there were many cases in the State.

PENNSYLVANIA.—Since January 1st, 1894, small-pox has existed and been found at the following places: Reading, Fritztown and West Leesport, Berks County; Mechanicsburg and Carlisle, Cumberland County; Oakdale, Alleghany

County; Jeannette, Westmoreland County; Pittsburg, Tyrone Forges, Philadelphia, Pottstown, Bedford County; Williamsport, Wilkinsburg, Alleghany County; Shamokin. (An Italian direct from ship at New York died at Dagus Mines, Elk County), Riverside, near Danville, Danville, Jersey Town, near Danville, Mohn's Store, Berks County, and Pottsville.

Small-pox is now at Pittsburg (has been stamped out twice here in the last four months), Shamokin, Riverside, Danville, Jersey Town, Mohn's Store, Berks County, Maconaqua, Pottsville and Philadelphia. About a month ago a man died at Danville from what was called purpura hemorrhagica and chicken-pox; soon after a case of small-pox occurred at Shamokin and then at Riverside. In both these cases the disease was traced to Danville. A bitter controversy ensued; but the State Board of Health very properly directed the Danville Board of Health to treat all cases of so-called chicken-pox as small-pox, and on March 16th there were under treatment there: small-pox, 2 cases; varioloid, 3 cases; chicken-pox, 10 cases. The case at Pottsville is traced to Danville.

A very disgraceful performance occurred during the week in which a small-pox case was compelled to walk forty-two miles before he was taken care of. How many cases will result from this case cannot be told. There are now 27 cases in the State—a less number than at any time for the last six months. The vaccination of the public schools is progressing very satisfactorily.

PHILADELPHIA.—The Board of Health of this city at this time has a good small-pox record. In 1893 there were 43 cases reported and 5 deaths. There have been 3 cases since January 1st—2 importations from Connecticut and 1 from New York. There is only 1 case there now. Repeated introductions of the disease have occurred, and it has been repeatedly stamped out. The President of the Board is fully warranted, in his annual report, in saying: "The comparative freedom of the city from the disease notwithstanding its prevalence in a number of places in Pennsylvania and adjoining cities, shows that among other things a most careful supervision and prompt application of prophylactic measures in all first cases and vaccination was successfully resorted to.

There were twenty-four centres from which the disease might have spread ; but notwithstanding this fact, the entire number of cases was only 13."

The steamship *Erivan*, from Rouen, France, arrived at the Delaware Breakwater on March 3d with 2 of her crew suffering from small-pox.

OHIO.—Since February 1st small-pox has been reported at Springfield, Toledo, Columbus, Lima, Dayton and Worthington. The Columbus case was two days in the General Hospital before character of disease was discovered, and the last week another case was found at that place. Since the first case was reported at Toledo, 3 more have been found, but no connection can be traced to the first case. Owing to the fact that a severe outbreak occurred in the State early in 1893 (introduced by immigrants), which resulted in the vaccinal protection of many, and the energetic efforts of the State Board of Health for the last four months in pushing vaccination, it is believed that the disease will be prevented from spreading to a great extent. There are now in the State five points of infection and 8 cases.

ILLINOIS.—From October to March 8th there were, outside of Chicago, 5 cases in Mascoutah Township, Clinton County ; Hull's, Pike County, 1 ; Cotton Hill Township, Sangamon County, 1 ; Manhattan, Will County, 1 ; Round Grove Township, Livingston County, 1 ; Joliet, 4 ; Peoria, 2 ; Spencer Station, Will County, 2 ; Jonesboro, 1 ; Edwards County, 15, all in county poor-house. Of these there still remain at Joliet, 3 ; Jonesboro, 1 ; Edwardsville, 15, and at Spencer Station, 1, making 20 in all—a good record, taking everything into consideration. It is said that only 5 cases occurred among the laborers on the Drainage Canal.

CHICAGO.—In December, 66 cases were reported ; January, 180 ; February, 243 ; and to March 17th, 155, making a total of 578 since the beginning of the year. There are now in hospital 153 cases. It will be seen that since January 1st there has been a very rapid increase, and that there are now in Chicago over one third of all the cases in the United States. The conditions that obtain are peculiar, and while more public vaccinations have been performed than in any other city in the United States, and a great deal of very ex-

cellent work done, the number of cases still continue to increase.

We are pleased to note that the clergy are interesting themselves in vaccination, and through their assistance whole congregations are being vaccinated; also that a house-to-house inspection is being inaugurated, and we have no doubt much good will be accomplished. With the elevation of temperature, the number of cases will begin to decrease.

The epidemic commencing in 1853 continued nearly through 1855, and was kept up by immigrants. We had another commencing in 1863, and continued to the end of June, 1865. During this time immigration revived, and contributed to the keeping up of the disease, although some share of the cases were contributed from the large number of soldiers and prisoners of war at Camp Douglas. In 1871 small-pox was brought here a few days after the fire by immigrants, and in 1872 there was a marked increase of both foreign and domestic immigration into Chicago, attracted by the rebuilding of the city. This epidemic commenced in October, 1871, and continued until May, 1874. The next commenced December, 1879, through an immigrant, and continued to the end of 1882.

After small-pox has obtained a foothold in a large city, it can only be stamped out by securing the vaccinal protection of all that may be liable to contract the disease, as no one can tell when they will come within the influence of the contagion.

WISCONSIN.—Under date of March 9th, Dr. J. T. Reeve, Secretary of the State Board of Health, reports as follows:

"Until January 20th last our State had been almost entirely free from small-pox for years. On that date a case was reported from Milwaukee in the person of a little girl. The origin was not discovered. Very strict precautions were taken, and the disease was confined to this case.

On January 27th the disease appeared in a prisoner in the county jail at Janesville. It was confined to the original case, which proved fatal. Since that date it has appeared in the jails at the following-named places, in the order and to the extent named, to wit: Juneau, January 31st, 1 case, recovered; Sheboygan, February 1st, 1 case, recovered; Portage, February 12th, 1 case, recovered; Madison, February 14th, 1 case, died; Jefferson, February 14th, 1 case, followed Feb-

ruary 21st by a second case; Waukesha, February 20th, 2 cases, died; Elkhorn, February 23d, 1 case. Several of these cases were in the persons of tramps arrested for vagrancy or crime; and some facts lead to the belief that the cases were closely connected in their origin. For example, the case appearing in the jail at Elkhorn, reported to this office February 23d, the prisoner spent the night of February 8th in the jail at Jefferson, from which small-pox was reported on the 14th.

The disease has also appeared in tramps in the following places, the tramps being at large at the time of their coming down with the disease: February 3d a report was received from Waukesha that a tramp was caught upon the street suffering with small-pox. He was confined to the pest house, and recovered. February 10th, a tramp came to the police station at Fort Howard, complaining of being sick. The Health Officer was called, and not diagnosing the case as small-pox, sent the man to the Sanitarium, of which he is the proprietor. It was soon manifest that he had the small pox, but not until others had been exposed, and subsequently four inmates of the Sanitarium were stricken with the disease. The original case died; a second death followed. One of the attending physicians in these cases carried the disease to his seven-weeks-old babe. He then, with wife and babe, entered the Sanitarium. The child died, making 6 cases occurring at this institution, with 3 deaths.

February 14th, a case was reported from De Pere—a girl working in the rag-room of a paper-mill. One case followed from exposure to the first case. March 4th, another case was reported from De Pere—a man employed in a paper-mill; apparently there was no connection with the former cases.

February 19th, a case was reported from Camp Lake, Kenosha County, in the person of a laborer who came from Chicago the week previous. No cases followed.

February 22d, a girl working in a paper-mill at Menasha was reported as having small-pox; the origin was supposed to be from the rags; the girl died. No cases followed.

Beloit reported February 24th, a case in the person of a hotel girl—origin very doubtful. One case followed.

March 2d, a case was reported from Lewisburg, Grant County. No additional cases reported.

On March 8th, the last case reported, was at Neenah, in the person of an infant six months old. No probable source of origin yet discovered, but some of the family had recently been travelling.

The cases outlined above make a total of 27, with 8 deaths, reported from sixteen distinct communities. In all cases (with possibly one exception) the local boards of health and health officers were prompt and thoroughly effective in adopting stringent measures of quarantine, and the recommendation of general vaccination issued by the State Board of Health early in January, together with the rule of the Board requiring vaccination as a prerequisite to admission to school, published January 31st, caused vaccination to be very generally carried out throughout the State. There has since been reported a suspicious case at Milwaukee. This is a very instructive and interesting report.

MICHIGAN.—Dr. Baker, under date of March 16th, says that since January 1st, 1894, there have been four jurisdictions in Michigan infected with small-pox: Otsego village, 4 cases; Otsego township, 2 cases; Menominee, 4 cases; and Crystal Falls, 1 case. In all, 11 cases and 3 deaths, with no spread so far from the original cases. There are now in the State 4 cases. The vaccinal status of the State is good, and the sanitary organization of the State excellent.

IOWA.—Within the last four weeks Iowa had seven points of infection, and in no instance did the disease spread beyond the first cases, all being importations from Chicago; small-pox now exists only at Tama City, where there is 1 case. This is a remarkably good record, and reflects great credit upon the local and State health authorities. Vaccination, in spite of opposition, has been very general.

MINNESOTA has had but 1 case, and there is no small-pox in that State now. The vaccinal protection of the State is very good, and with its complete and efficient health organization there is not much danger of the disease, if introduced, of spreading.

KENTUCKY.—Dr. McCormack says that we have only had 14 cases of small-pox in this State during the present epidemic, 16 in Louisville, and 4 in Paducah. The disease was promptly stamped out in both cities.

INDIANA.—There is at this time a case at South Bend, and 2 at Crown Point; both contracted the disease at Chicago. So far there has been no spread from the original number. The prevalence of the disease at Muncie and other points in this State during the past summer resulted in pretty general vaccination, and the State, generally speaking, is well protected from a vaccinal standpoint. The State Board of Health is, however, pushing vaccination, lest the disease obtain another foothold.

WEST VIRGINIA.—Last fall the disease appeared at Bridgeport, Harrison County, in the person of a young girl just returned from Chicago; 6 cases of varioloid developed from this case; but the disease was completely suppressed before January 1st, 1894. In November, 1893, small-pox was discovered in the town of Lewisburg, Greenbrier County. Three men contracted the disease from the first case, and from these, after January 1st, 1894, 12 cases occurred, nearly all mild varioloid. The disease then disappeared.

VIRGINIA.—Since December 1st, 1893, there were 13 cases in Lunenburg County, 15 in Southwest Virginia and 20 at Shendon, near Luray. There is now only 1 case in the State.

MISSOURI.—Only 3 cases were sent to the hospital at St. Louis in eighteen months—1 in January, and the others in February. They belonged to the tramp class of wanderers, and drifted here from other places. One unvaccinated patient died of confluent small-pox, the others recovered, and the hospital is now closed. No cases have occurred throughout the State of Missouri. Dr. Homan, Health Commissioner, says: "Public vaccination has been practised in St. Louis more diligently during the past six months than ever before, and this may account to some extent for the immunity enjoyed."

GEORGIA.—There are 5 cases of small-pox at Senoia, and 1 case of small-pox and 4 of varioloid at Atlanta. Source of infection, Senoia. The Atlanta cases were thought to be chicken-pox.

TENNESSEE.—Dr. J. D. Plunkett, under date of March 17th, reports that since November 7th, 1893, there are 81 cases of small-pox in Tennessee. There are now in the State at Knoxville 4 cases, Chattanooga 2, and Nashville 2.

ONTARIO.—One case near Burgessville, Oxford County. Origin, Chicago.

There are now in Massachusetts 21 cases; of these, 17 are in Boston. Connecticut, 2; New York, 123, distributed as follows: New York City, 43; Brooklyn, 60; and 20 cases throughout the State. New Jersey, 4 cases; Pennsylvania, 29, 12 of these being in Philadelphia. Ohio, 7 cases; Indiana, 3; Illinois, 168 cases—of these there were 15 in the State and 153 in Chicago. Wisconsin, 10 cases; Michigan, 4; Iowa, 1; Virginia, 1; Georgia, 10; Vermont, 1; and Tennessee, 8 cases. Total in the United States, 389 cases, and less than there were on March 1st.

From the foregoing, it will be seen that the effort of the health authorities, taken as a whole, has been successful, if not in stamping out the disease, in controlling it, as the only places where there is an increase are Chicago and Brooklyn.

The preceding article, taken from the *Journal of the American Medical Association*, appears to be Dr. Rauch's last contribution to sanitary knowledge. The editor of the *Journal*, referring to it and to Dr. Rauch's death, says that

"On Saturday last (March 24th) a telegram was received from Dr. William Guilford, of Lebanon, Pa., announcing that Dr. Rauch had been found dead in his bed that morning. . . . A note from him (Dr. Rauch), written on Thursday, stated that he would finish the article the next day. This article is therefore his last contribution to the literature of public hygiene. Since last July Dr. Rauch has edited the Public Health department of this *Journal*, and the leaders written on sanitary topics since that date were, most of them, his production. Few men were better qualified to write with authority on sanitary subjects, and as a practical hygienist he had few superiors in any quarter of the globe."

OBITUARY.

JOHN H. RAUCH, M.D., died at his birthplace, Lebanon, Pa., March 24th, 1894. He was born September 4th, 1828. He was graduated in medicine at the University of Pennsylvania in 1849. The following year he settled in Burlington,

Ia. His mind early turned toward natural sciences, and he became a private pupil of Professor Louis Agassiz, of Harvard College, and lived for some time in his family. In 1850, on the organization of the State Medical Society, he was appointed to report on the "Medical and Economic Botany of Iowa," and his report was published. He was an active member of the Iowa Historical and Geological Institute, and made a collection of material—especially ichthyologic—from the Upper Missouri and Mississippi rivers for Professor Agassiz, a description of which was published in *Silliman's Journal* in 1855. In 1857 he was appointed Professor of Materia Medica and Medical Botany in Rush Medical College, Chicago, which chair he filled for the next three years. In 1859 he was one of the organizers of the Chicago College of Pharmacy, and filled its chair of Materia Medica and Medical Botany. During the Civil War he served as Assistant Medical Director of the Army of Virginia, and later in Louisiana. At the close of the war he was breveted Lieutenant-Colonel. On his return to Chicago, Dr. Rauch published a paper on "Intramural Interments and their Influence on Health and Epidemics." He aided in reorganizing the health service of the city, and, in 1867, was appointed a member of the Board of Health and Sanitary Superintendent, which office he filled until 1893. During his incumbency the great fire occurred, and the task of organizing and enforcing the sanitary measures for the welfare of 112,000 homeless men, women and children devolved upon him. In 1876 he was elected President of the American Public Health Association, and delivered the annual address on the "Sanitary Problems of Chicago," at the 1877 meeting of the Association. When the Illinois State Board of Health was organized (July 12th, 1877), Dr. Rauch was elected its first President. In 1878–79 the yellow-fever epidemic in the Southwest engaged his attention, resulting in the formation of the Sanitary Council of the Mississippi Valley, in which Dr. Rauch was actively instrumental; and the establishment of the river inspection service by the National Board of Health, to which he also contributed. His investigations on the relations of small-pox to foreign immigration were embodied in an address delivered before the National Conference of the State Boards of Health at St. Louis in 1884. In 1887

he published the preliminary results of his investigations into the character of the water supplies of Illinois. In 1888 he published a report on the quarantines of the Atlantic and Gulf coasts, and in 1892 he assisted ex-Surgeon-General Hamilton in the establishment and equipment of Camp Low, quarantine station at Sandy Hook. Dr. Rauch was the author of monographs chiefly in the domain of sanitary science and preventive medicine. But his most signal service was the promotion of higher medical education.

The Act to Establish a Board of Health, and the Act to Regulate the Practice of Medicine in the State of Illinois went into effect simultaneously, July 1st, 1877. The acts were approved by the Governor in the order named, May 25th and 29th preceding. As President of the State Board of Health, to superintend the administration of the Medical Practice Act, requiring every person practising medicine in the State, if a graduate, to present his diploma to the State Board of Health for verification as to its genuineness; or, if not a graduate, to present himself before said Board and submit himself to such examination as the said Board should require, became one of the most important duties of Dr. Rauch's office. His earnestness in the measure was shown by the promptitude with which he had the application papers prepared, and the comprehensiveness of the examination questions which the non-graduates were required to answer.

In the first annual report of the Board, comprehending the period from July 12th, 1877, to December 31st, 1878, it is stated that, as nearly as could be ascertained, "about 3600 non-graduates were practising medicine in the State when the Medical Practice Act went into effect. Of these, about 1400 have since left the State or quit practice." The energy with which Dr. Rauch pursued the subject during the whole period of his service in the State Board of Health, which he relinquished on account of ill health two years ago, is common knowledge to the medical profession throughout the country. To him more than to any one else, indeed more than to all others, is due the Medical Practice Acts of other States, weeding out quackery, and the extended terms of medical colleges from three to four years, requiring additional study preliminary to conferring the medical degree.

THE NEED OF A NATIONAL HEALTH SERVICE.

A PETITION TO ESTABLISH A DEPARTMENT AND A SECRETARY OF PUBLIC HEALTH.*

To the Honorable the President of the Senate and the Speaker of the House of Representatives of the Congress of the United States of America:

The American Medical Association, at its meeting at Washington in May, 1891, adopted unanimously this resolution:

"*Resolved*, That the President of the Association, W. T. Briggs, of Tennessee, appoint a committee to memorialize the next Congress to create a Department and a Secretary of Public Health."

At the meeting of the Fifty-second Congress in December, 1891, a petition and a bill to that effect were introduced in both Houses; in the Senate by the Hon. John Sherman, and in the House by the Hon. John A. Caldwell, and they were referred to certain committees. No report has ever been made to either House on the subject.

At the annual meeting of said Association in the city of Detroit, in June, 1892, the committee reported the failure to secure any action of Congress on the petition; whereupon the Association again directed the select committee to renew its appeal for Congressional action; but no notice was taken of it, chiefly because the alarm at the approach of cholera from Europe led Congress at once to enlarge the existing quarantine system, which it was supposed would answer all purposes. The Chairman of the committee addressed a communication to the Chairman of the Committee on Contagious Diseases in the Senate, which set forth that while the quarantine measures were very effective so far as the hindrance to transplanting the diseases of other lands was concerned, yet they did not include all the measures for the operation of preventive medi-

* The proposed Bill to Establish a Department and a Secretary of Public Health, here petitioned for, was printed in THE SANITARIAN, April number, 1892, Vol. XXVIII., p. 351.—EDITOR.

cine which the American Medical Association was seeking to establish for the public welfare.

The only answer made at any time by this gentleman was merely verbal, and that it was his belief that Congress would not appropriate money that would increase public expenditure.

At the annual session in Milwaukee in June, 1893, these facts were reported, and the special committee was ordered to renew the appeal at the approaching Fifty-third Congress. Under this authority, the undersigned beg your consideration of the whole subject anew.

In the Pan-American Medical Congress, which met in Washington in September, 1893, under the auspices of our Government, the most august assembly of medical men that ever met in this hemisphere, this question was carefully discussed and unanimously approved. Moreover, a large number of State boards of health, the National Board of Public Health and numerous medical societies in different cities and States have given their adhesion to this movement.

The American Medical Association is constituted of men of distinction in every part of the Union. For more than forty years its sessions have been held in the chief cities of the States lying between the Atlantic and Pacific coasts, and it represents nearly one hundred thousand intelligent and well-known citizens. The annual sessions have greatly promoted scientific research into the causes and treatment of diseases of every character, the formation of State boards of health, higher medical education, and the publication of treatises on preventive medicine and medical practice, which form a continuous line of medical progress in the last half of this century.

The Government, through the operations of the Surgeons-General of the Army, Navy and Marine Hospital Service, has made liberal expenditures for the National Medical Library and its Index Catalogue, a pathological museum, and some investigations on the origin, nature and spread of the fearful infectious germs that are brought to us by immigrant and other ships. But the medical profession believes that the Government can, in a wider way, promote the public welfare by creating a Department of Public Health, the head of which should be a physician, a member of the Cabinet, and

on a parity with the heads of the Departments of War, Navy, Finance, Justice, Agriculture, etc. A fair investigation will show that no profession excels ours in positive efficiency to sustain public order, public comfort and public virtue.

Hygienic science on the one hand, and the progress of the sciences and growth of the mind on the other, have always been powerful factors in the evolution of humanity. In the first century, when Rome had reached her apogee in power and civilization, and had constructed great aqueducts, public fountains, public latrines, gymnasiæ and a vast system of sewers, under the suggestions of physicians, Martial said that it was not merely a question of living for the people, but to have good health ; hence the maxim that has come down to us : " The health of the people is the supreme law."

Recently the Lord Chancellor of England appointed Sir James Crichton Browne, M.D., LL.D., as his visitor to make certain investigations in regard to the public health, and of the influence of certain employments upon the health and comfort of the laboring classes. We can only give a partial exhibit of his observations. He found, that while the decline in the death-rate at all ages had been, within a certain period, 17.5 per cent in those under fifty-five years of age, it had been reduced only 2.7 per cent in those above fifty years old. The increased longevity has occurred under the age of thirty-five. The decline in the death-rate beyond the age of forty-five had been insignificant, but from sixty-five to seventy-five the death-rate was increased. He adds that it is not satisfactory to learn that while there has been enormous increase in the duration of life in babies and young people, the loss is alarming among those who are eminent in experience and judgment. The causes of this vital failure in the mature element of society was not difficult to find by his statistical studies. In three or four groups of diseases a marked increase in mortality has taken place ; thus, in England and Wales, cancer in five years, from 1859–63, carried off 35,654, while in five years from 1884–89, the deaths by cancer were 81,620—an increase of 120 per cent. The increase in deaths by nervous diseases in the same period was 38 per cent ; in kidney diseases for the same period the increase in deaths was 164 per cent ; in heart diseases the increase was 143 per cent. These affections, he

continues, are of degenerative character, and may largely be traced to vital abuse, overstrain and the increasing luxuriousness in our advancing civilization which establish premature senility. Moreover, the large increase in insanity is causing solicitude everywhere. It cannot be questioned that this fearful increase in bodily and mental decay should be well understood by and placed before the people. There is another phase of this question of premature decay of great interest, and it concerns a burning question of the day. Sir James says, that owing to the strain and drive in many manufactories where handicraft piecework prevails, the neuro-muscular systems of the shoulder, arm and hand, which on the average attain maturity at thirty years, and should continue as much longer, begin to fail at forty-five years; and while at thirty a man can earn forty-five shillings a week, at forty-five, strive as he may, he cannot earn over thirty-eight shillings, and at fifty-five his earnings fall to twenty-four shillings, owing to the premature decay of the motor apparatus from overwork. In Sheffield he found that penknife-makers aged thirty years strike 28,000 blows a day with a hammer, but at forty-five they find their celerity and skill have declined to nearly one half, and a reduction in wages to the same extent ensues.

As we have no national office for the collection of such statistics, except, perhaps, the Bureau of Labor in a partial way, we must rely upon those furnished by other nations.

The telegraph operators, everywhere, sooner or later become the victims of scrivener's palsy of the forearm and fingers on account of the excessive use they are obliged to make of them, for as their celerity fails their wages decline. The mail clerks on railroad trains are required to work many hours more than in other Government offices, and are, besides, compelled to memorize, with all the certainty of the multiplication table, the locality of eight to ten thousand post-offices in the vast districts of the country. The effect in numerous cases of this excessive use of the memory is insomnia and a mild form of dementia. It is, certainly, a function of statesmanship to investigate these serious evils. The Government has begun to investigate the exposure of employés on railroads who are often wounded and killed in the coupling of cars; and the investigation of the desperate use of young

people in the "sweat shops" of clothing establishments has created a great outcry for their relief.

"In 1848 the public health bills in England went into operation. The annual death-rate which up to that time was 22.5 per 1000 diminished to 17.9 per 1000 within twenty years; showing a saving in that time of 125,000 lives. The effect of hygienic measures in preventing sickness is well known in the State of Michigan. During the year 1889 there were 417 outbreaks of scarlet-fever. In 72 of these outbreaks isolation and disinfection were neglected, and the number of cases per outbreak was 16.78 per cent. In 52 outbreaks both isolation and disinfection were strictly enforced, with the result of limiting the number of cases to 2.67 per cent. In many outbreaks only one restrictive measure was used and the other neglected, and in all such cases there was some reduction in cases, but never to the same extent as when both were enforced." (Dr. J. W. Brannan, *New York Medical Record.*)

Our census of 1890 shows that 524,000 deaths occurred in that year, and that 100,000 were from consumption. It is estimated that about one half the whole number was due to diseases that could have been prevented.

It is now becoming generally known that infectious diseases and toxic elements are disseminated in food. An infectious disease in the family of a dairyman, or among his cattle, may be as widely spread as is the distribution of his milk. The pollution of streams suplying towns, cities and wells of water at farmers' homes we know, definitely, subject the people to tedious and fatal diseases which a wise sanitation would prevent. It is absolutely demonstrated that by the rigid application of hygienic measures the ravages of a pestilence may be stayed. Medical scientists speak of such destruction as a self-imposed curse of dying in the prime of life.

In primitive history we find that hygeia and therapy were the conservative and remedial agencies of afflicted peoples. We read with admiration of the wisdom which made sanitary measures a part of the religious codes of a nation. The hygienic laws of Moses, which undoubtedly embody fragments of his Egyptian training both as a physician and a priest, and the moral law, the Ten Commandments, received from the

hand of God, have been kept together by the Jews in their sacred books and inculcated in their religious and social rites for thousands of years, which clearly accounts for their existence, physically and mentally, as one of the most vigorous races among the multitudes of the earth.

Physicians are held to be the guardians of the organs that concur for the maintenance of a healthy animal life, but it is not so generally understood that the great brain, the physical basis of the mind, is just as much an organ of their conservative regard; it is not so well known that the healthy brain is necessary to a free will—the function that places man in his supreme condition as master of created things.

The increased light which physiology and pathology have shed upon the relations of the brain and mind has enabled us to locate the area in the brain where exists the capacity to think, where sensations are shaped into concepts, where ideas are symbolized in language, where memory holds its seat, the imagination displays its marvellous powers, and self-control is enthroned. All of the apparatus of our mere animal life—respiration, circulation of the blood, digestion and assimilation of food, excretions of waste tissues and the actions of the nervous and muscular systems are to maintain and develop in perfect health an area which we can cover with our two hands. It is the region of self-consciousness, the plane where spirit and matter are in impact and which enables a man to say, "I know that I know, I feel that I feel, I think that I think;" it is there, indeed, that consciousness feels itself to be coterminate with the cosmos. Who but the physician has the right to supervise this dread region? Closer than the minister of religion or the rights of family, he stands as the guardian and interpreter of its illimitable faculties.

By prolonged physiologic and pathologic research, psychology has been lifted above the mere subtle reason of the schoolmen into the light of a new day, and is now comprehended as never before. Metaphysics is no longer a mere jugglery with words and phrases, but a function of consciousness only existing in the healthy area above described; it is the highest expression of reason, whereby the intuitional phenomena of thought and the phenomena derived from the senses, the ideal and the real, the subject and the object, the me and the

not me, are brought by a free will into accord and the consciousness is freed from the baleful illusions, hallucinations and delusions which exist in the insane. The imperfect state of consciousness in unsound sleep illustrates a mental state wherein ideas flow freely, regulated only by automatic association; we are led everywhere by the most grotesque and often fearful ideation, without any self-control; the metaphysical function is in abeyance; there is no metaphysics in dreams, the consciousness is on too low a plane for any exercise of the will. This argument is legitimate and should be convincing, that medical men hold an indispensable relation to the social and political state.

All abuses of the appetite in any direction, all violence done to the brain by overwork, overstrain, the excitement of narcotics and the delirious speculative ventures in the values of stocks and of the products of the crops—everything, indeed, that keeps up unduly mental excitement, deteriorates at length the organic structure of the brain, enfeebles the mind in judgment on any subject; in short, a condition of dementia supervenes. It is for the physician to warn teachers of the deleterious effects of overtasking scholars; to warn people against luxuriousness, indolence and the habitual use of stimulants, and excess in any passion or appetite; for, while the organs of mere animal life are damaged, the nutrition of the brain is changed, the will becomes so impaired that self-control is lost. It is appalling to contemplate the social destruction about us on account of the prevalence of the passions of avarice, peculation and lust which so greatly defile public virtue. These are evils the indulgence of which has ruined statesmen and empires. Luxury and vice in combination form the dynamite in the moral world.

The medical supervision should begin in the primary and intermediate schools, which are frequently in overcrowded, ill-lighted and ill-ventilated rooms; this has become so serious that in Germany, at least, it has brought about State interference, and physicians must be consulted in regard to the hygienic properties of a schoolhouse. The physical structure of the eye is most liable to evil changes, leading to short-sightedness; and the organic life of the brain substance is exposed to deterioration leading to lowering of the intellectual

faculties. In the technological schools of France the use of tobacco is forbidden, because it has been ascertained that its abuse renders the student incapable of solving the highest problems in mathematics. It is also of great importance that the methods of teaching should not involve an excessive abuse of the memory—the *memoriter* plan. This, it is thought, is too greatly employed in American schools; but it seems to be a necessity so long as the rank of a pupil in his class depends upon the rate per cent of correct answers. The abuse of the memory fatigues the brain, as physicians well know, and impairs the power of the free will. Lessons are memorized, and not acquired by efforts of the understanding, hence they are not well retained, and furnish a poor basis for intellectual ability. Not only so, but the emotional conditions so often encountered, and the startling phenomena of hysteria and hypnotism are thus often superinduced. There are no fortuitous conditions that concur for the production of the best moral and political circumstances of society; the whole is purposive intelligence existing in the individual and combined in the exigencies of the family and the State. Wherever the highest development of physical health exists, there will be found the surest basis of intellectual life. These are not abstract questions of philosophy, but are the most practical questions of our times.

A candid and broad investigation of the medical profession shows that it appertains to the most important functions in the commonwealth. A distinguished English writer has said: "I think it will be well for the State when the medical profession is represented in the councils of the nation as weightily as can be assured by official places and conferred dignities." An eminent German economist has said: "We must look to the medical men to resuscitate society." There are no evils in society which physicians may not do much to avert; there are no foes of human happiness so widespread, miserable and despairing as those which underlie public health; and physicians are the only hope of public relief.

It is certainly a remarkable spectacle, the constant efforts of physicians to save the people from outbreaks of disease, when success will limit to the smallest dimensions our practice and incomes. But this arises from the nature of our studies whose

tendencies are to render an unselfish service to humanity in the time of its calamities. The physician is bound to render service to the poor especially. The amount of gratuitous service in great cities is a very large part of their practice. In all of our public general hospitals they serve without salaries.

If there were cruelties to prisoners on either side in our Civil War, it was not perpetrated by the surgeons of the opposing armies. When the strife ceased they were the first to extend the fraternal hand across the red fields of conflict.

The progress of medical science establishes our increasing responsibility to place our medical schools on the highest plane of teaching. There is a very large aspect of medicine that renders it so commonplace as practically to degrade it, and this is a consideration that will be a great obstacle in the way to your adoption of our bill. I allude to the giving of drugs by everybody for the relief of symptoms of disease. It may be said all the people, young and old, not only offer general advice, but specify the remedies to be used. If medicine has no other basis than prescribing, it would possess no autonomy, embody no science, nor philosophic spirit; it would only become an unstable empiricism, and would be abandoned to a revolting charlatinism and its practitioners be mere vendors of secret, false remedies, and, as is now so largely done, would rob the sick not only of their money, but of any hope of relief.

The human frame is said to be the Divine idea of mechanism, and nothing in all the works of creation so completely illustrates in its structure what is called by geometers the "principle of least action—that is, the greatest competency in function with the least expenditure of material. Its figure, symmetry, mechanical, physical, chemical and biological forces are so correlated that it fulfils all the conditions of adjusting internal to external relations. Its organs of special sense, its area of consciousness wherein it is the equipoise of the physical creation, justifies the ascription that man is the crown and flower of creation. Can any one doubt that it is only by a long and minute study that such an organism can be comprehended? Congress appropriates annually more than a million of dollars for the maintenance of military and naval schools, where the whole range of sciences are inculcated to

ascertain the most approved methods of public defence and of killing our enemies. Can it be thought that any less science is needed to ascertain how to destroy myriads of enemies that provoke disease, and all the more terrible because invisible to common sight; and to save from death the most precious objects of human love and solicitude? Are there more scientific problems for solution in war by sea, or land, than those that exist in the grievances of our social life?

But we are not asking Congress to build a great medical school of instruction. Congress appropriates willingly large sums for the study of the diseases of cattle and plants, but comparatively nothing for the diseases of the people. But we show you that 522,000 inhabitants died in 1890, and that 250,000 of them at least have perished by diseases which are preventable!

We ask for a governmental Department of Public Health; one of whose functions would be the combination of the intelligence, feeling and force of all the schools and medical societies of the nation for collective investigation, in order that physicians may become capable to the utmost to relieve the woe and agony of suffering in individuals and families.

For the medical profession to be able to exert all its benign influences in society, it must have the same rank and dignity that is attached to other departments in the President's Cabinet. The methods of research are the same as those employed by other scientists. The methods of the calculus that are employed to ascertain the cause of the perturbations of celestial bodies are the same as those employed in the investigation of obscure diseases. The physician is guided in his investigations by the canons of logic, and hence it is that the opinions of well-trained doctors are as reliable and stable as those of jurists, statesmen, engineers, merchants, divines, lawyers and political economists. The same reproach applied to doctors, because of their different opinions, applies equally well to all other callings.

At this time the success in medical practice surpasses any other period of its history. The death-rate in our general hospitals was never as low. In surgery it is about 3 per cent; thousands of successive births take place in maternity hospitals, without a single death; the mortality in typhoid-fever is

about 3 per cent in hospital practice ; in general medicine the rate is declining ; but it is not as low as in surgery because of the increasing mortality, as before said, in such diseases as consumption, cancer, kidney, heart affections, and the continued bad hygienic conditions in the congested areas of our large cities, where one half the children die under five years of age. (Cincinnati Hospital Report, 1893.)

The influence of medical culture upon the progress of civilization, as before said, both in ancient and modern times, forms a great chapter in human history. The evolution of the mind and the achievements in philosophy are no more marvellous than what is seen in preventive and clinical medicine. The chief figure in the most brilliant era of Greek civilization was Aristotle. He was of the Esculapian caste, and took up the profession of his father, a practitioner of medicine ; but his constant dissection of animals and plants aroused a philosophic spirit of seeking behind all the phenomena of nature by synthetic formula, the unity of all living beings and their indissoluble relation to the cosmos. We cannot, in our space, point out all the achievements of his immense genius nor his specific work in detail that entered into his purpose of constructing the edifice of inductive philosophy. Mere fragments of his precious writings were the only intellectual food (excluding the canon of sacred Scripture and the liturgies of the Church) of the Dark Ages ; but when at last the chief of his philosophic works were collected and translated into Latin, the dawn of the revival flushed the skies, and the sun of a new mental life shone in full strength upon the scholastic world—the Church adopted his philosophy, and the Renaissance was complete. The influence of Aristotle has continued to direct modern thought, and though much of it has been laid aside, his inductive philosophy and logical methods are invincible.

In Europe, medical affairs have always had the watchful care of the State, and eminent practitioners are now more than ever before receiving titles of distinction. In Italy a physician holds a Cabinet secretaryship, and in the parliaments, everywhere, distinguished practitioners are taking part in general statesmanship. Without the science of medicine, civilization could never be effective in semi-civilized and barbarous lands.

The conquest of India by Great Britain has been maintained by superior military power; but its present tranquillity is largely due to the beneficent work of medical practice. Since the last great rebellion there the English and missionary societies of our own country have established fifteen hundred hospitals and dispensaries, and medical schools are increasing in numbers. The light of Christian benevolence is now carried into the hitherto closed doors of the homes of the people. In China the same benign work has taken deep root. Fifty years ago Dr. Parker, of the American Presbyterian Church, opened a hospital in Canton, and an immense work has been accomplished in surgical and midwifery practice, for which the Chinese had no remedies at all. Now a large number of hospitals and dispensaries have been planted along the sea coasts and throughout the interior. Besides male, a large number of well-educated female practitioners, are employed in them. It is the most touching spectacle of human sympathy and relief the world has ever known. Were it not for their skill in medicine the American missionaries would be expelled. Japan, Korea, Java and Africa are being advanced in civilization in the same manner. Dr. Mungo Park and Dr. David Livingston were the most venturous explorers of Africa.

It is the belief of many physicians that if from the beginning of the settlements in this continent the medical office had been recognized as a department of the State, on a parity with those of War, Justice and the rest, the great tribes of savage races could have been made friendly, and allies, and brought under the terms of a high civilization by the humane influence of our medical men.

Though Congress is voting vast sums for agricultural schools and experimental stations, yet these are above the reach of the great mass of farmers and their adult sons and daughters. They cannot leave the fields and the household duties for at least nine months of the year, and they cannot pay the expenses incident to college life; but schools of instruction, by means of lectures, demonstrations, drawings and experiments in physics, chemistry and the structures and the functions of the chief organs of animals and plants, can be readily inculcated by the doctors in medicine who have themselves been taught in this manner. These lectures can be

given by physicians during the winter seasons in the towns of the counties and within reach of the farmers' homes, and a central office, such as we propose, would aim to promote this without expense to the Government.

It will be the means of putting new life into the freshest and strongest minds of the people. Every farm would soon become an experimental station; nature would be seen with new eyes, and the dull and monotonous lives of this most neglected class would become radiant with a new light. This may be counted one of the great influences that will follow the higher education of physicians.

The question may arise, whether such a department in the Government would subserve the interests of any particular sect or school in medicine? We reply that, amid the apparent disparity in medical practice, there is one true unity, and to attain this all true physicians are continually striving. It is evident that there can be but one anatomy, physiology, pathology, chemistry, physics or preventive medicine. The difference among doctors lies in therapeutics or treatment of disease, and as in the past, so for the future, practitioners will use a variety of remedies and in varying quantities, and there will be different modes of management of sick and injured people. With the advance in medical education the modes of treatment will become more unified.

The organism which is called medicine, like every other product of man's constructive genius, is striving to attain perfection, and to accomplish this it must be sustained in all its scientific undertakings by the co-operation of national and State legislation.

We ask each member of Congress, who seeks relief for himself and his family in the times of their distress through the most accomplished practitioners of medicine, to consider that his mind is the type of that of millions who constitute the republic; and therefore we ask him to lend his influence to our effort to secure for the people the most highly trained persons in the science and art of medicine.

We hope that it is plain that a Secretary of Public Health would represent the medical consciousness of the nation, and that he would be one to whom we could all look for the exploitation of measures that will direct continuous scientific

collective research in regard to epidemic and endemic diseases, and especially those of a degenerative character; and thus make his department the repository of the most important measures that concern the welfare and comfort of the people; and his duties will steadily grow broader and stronger in adaptability to public needs.

Respectfully submitted on the part of the committee.

C. G. COMEGYS, *Chairman.*

THE PLEASURES AND REWARDS OF A PHYSICIAN'S LIFE.—In his commencement address at Lafayette College last June, Dr. William W. Keen, of Philadelphia, gave the following picture of the pleasure and satisfaction of the busy physician, which we reprint at the request of another eminent professor:

"Sir Spencer Wells, as the net result of his first 1000 ovariotomies added 20,000 years to human life; and so far has modern surgery surpassed this result that every thousand similar operations to-day adds not less than 30,000 years to human life! Think what one of these lives means, as the pale cheek regains its color, the feeble pulse its force, strength succeeds weakness, each day records a gain, and finally health is re-established. The tender father returns to his usual pursuits; the adored mother once more becomes the centre of loving care of her family; the beloved child is restored to the family circle with ruddy health, rescued from the valley of the shadow of death itself. The hushed voices, the soft tread of the sick-room have given place to the laughter of health; the mists of sorrow are driven away; the anxious alarms of disease have vanished. What, think you, can equal the joy of the physician, as he views this happy transformation? Who is a dearer, more cherished, more welcome friend than he? Who finds a warmer place by the fireside and in the very hearts of his patients? No one can adequately appreciate his profound joy, his daily delight, his deep gratitude to the 'Giver of every good and perfect gift.' Oh, my friends, it is a blessed profession, a divine calling, with a heavenly recompense on earth!"

WOMEN AS OFFICIAL INSPECTORS.

ENGLISH EXPERIENCE.

THE demand that is being made in various quarters at the present time for the appointment of women as inspectors in institutions where those of their own sex are largely employed and maintained, is no new one, nor can it be said to be unreasonable, as it will be my endeavor in this article to prove.

When we remember that the history of our present Poor Law dates its beginning barely more than fifty years ago, we are justified in saying that the desire for women to be employed in the oversight of women and girls, is no recent demand, for we find it was urged in the same words that may be used today, as long ago as 1861, when a committee of the House of Commons sat on a commission of inquiry as to matters and management concerning the Poor Law. It may be useful, and not without interest, to give some of the statements then made, for blue books are not accessible nor attractive to many, and are studied probably but by few even of those who may be interested in the subject under investigation. So numerous indeed are these inquiries at the present time, and so voluminous the records of them, that we can hardly wonder if they do not receive the attention which they often deserve.

At the committee already referred to, after evidence had been taken as to the condition of the sick, and more especially incurables, in workhouses, the question was asked, "Can you suggest to us any remedy for what you consider to be the inadequate consideration for the wants and necessities of women in workhouses generally?" To which it was replied, "I consider that a greater supervision by women would be the only remedy for it. Women should be allowed to take a greater part in the management of workhouses and in the *inspection* of them. If there could be a woman inspector, whether from a central body, or locally, or if there could be somebody to share the responsibility of the matron, that would be the only plan to improve either the household details or the manage-

ment of the women and children." Again the question was asked, "Would you prefer, if you could get it, to have a paid woman as an inspector, who should be responsible in the same way as a male inspector is responsible?" To which I replied, that "a paid inspector, a woman with the authority of the Central Board, in the same way as there are inspectors at present, was compatible with the other suggestion of a committee of ladies appointed by the Guardians." * I was then asked if I had ever taken the opinion of any officials on the subject of lady inspectors, and I replied that "several gentlemen had said they considered it would be very desirable that there should be women inspectors."

The subject of women guardians was then introduced, and the question was asked by Lord Salisbury (then Lord Robert Cecil) if rate-payers would be willing to elect ladies. Fourteen years afterward the first woman guardian was elected by the Kensington rate-payers; and now that thirty-two years have elapsed, we are able thankfully to record that the advance of public opinion has placed no fewer than 180 women upon the boards of England, Wales and Scotland.

But we must return to our present subject of women as inspectors. In 1888 there was appointed another committee of the House of Lords to consider the working of the Poor Law, when the subject of inspectors was again brought forward, and, in reply to Lord Aberdeen, I again urged that a woman should be appointed to perform the duties of inspector of workhouse infirmaries, the special subject of consideration being the care of the sick. I may be allowed again to repeat the words then spoken. "Nurses would have greater courage in explaining their wants and grievances to her than to a man; besides which, there were many matters connected with a hospital which a woman who was a trained nurse, and at the same time acting as inspector, would be able to understand and inquire into."

And, once more, the same evidence was given, and the same opinion urged at the committee of the House of Lords on hospitals, in 1891; this opinion, it may be added, being endorsed by the report of the members, subsequently issued.

* This suggestion and hope was fulfilled last year, by order of the Local Government Board, thirty two years after.

When the matter was afterward named in the House of Commons the only objection raised to the suggestion was the usual one, and, as we believe, the only one that has been made—that of cost ; and the President of the Local Government Board added that he considered the further extension of lady guardians would answer the same purpose.

But let us look for a moment at the validity of this last argument. Valuable indeed as is the work and influence of women as guardians, the need which is now being urged for them as inspectors is more particularly for the care of the sick, and how can we expect the average woman guardian to be specially competent to perform this duty? The objection as to the present staff of inspectors, admirable as they may be for some of their general duties, is that they are not qualified by education or training for a knowledge of what is required for sick wards and infirmaries, none (with the exception of the last and recent appointment) being of the medical profession. How should such persons be capable judges of the needs of the sick, or of the manner in which the nurses perform their duties toward them? It is, indeed, a strange anomaly that for the Metropolitan District alone, where the infirmaries are separate, and, in most instances, admirably worked hospitals, under the care of resident doctors and trained and educated women, there is a medical inspector of high ability, whose whole time is devoted to the frequent inspection of these twenty-four institutions ; while in the country districts of all England only one such medical inspector is appointed ! Can any other facts or arguments be needed to emphasize and enforce our demand for an addition to this limited amount of inspection of the more than six hundred unions in which the sick are to be found?

But we have not yet given all the reasons which demand this change and addition, the chief one being the recent and rapid growth of the reform as regards nursing which has taken place in our workhouse infirmaries, trained nurses being now demanded by a large proportion of the unions, which have at last been aroused to a conviction of the cruelty, to say nothing of the false economy, of the previous system of nursing by ignorant and degraded pauper women. I have said that nurses are now being demanded by more boards of guardians

than can well be supplied with them ; but let us ask (for it is an important question upon which our whole argument turns) under what conditions and circumstances do these women work in the country unions to which they are sent? In many cases one is required to work alone, the numbers being too small for a second nurse ; but the work may be hard and trying, and if any duties arise in the night, she has to perform them also, and she can rarely be spared from her duties ; she is probably the first trained nurse who has ever been employed, and she finds that pretty nearly everything that she has been accustomed to consider essential for the care of the sick is lacking in her wards. But it may be asked, Is she not acting under the matron of the workhouse, who will superintend her work, encourage her in it and supply all her wants? We may indeed wish to believe that it were so, for then would her trying and difficult task be cheered at least by sympathy. But if we look at the facts as they are daily being brought before us, we find too often the very reverse of this happy picture, though we willingly allow there are exceptions here and there. In the country unions there are to be found no matrons who have any knowledge of trained nursing, or who have the capacity for even judging of or appreciating a nurse's work. Too often, therefore, she is met with jealousy, and her efforts thwarted and misunderstood ; orders are given which cannot be carried out, and the interference becomes intolerable ; at the best, intelligent supervision is lacking ; and how can the nurse's work fail to degenerate and herself to become demoralized under such a system and such circumstances as these? So deeply were these results felt to be inevitable, that in the case of one association for providing trained nurses, a lady who is herself a trained nurse has been appointed as visitor of the nurses in the different unions to which they are sent, and her visits are looked forward to with the utmost hope and gratification. Her remarks and observations on the state of the wards she visits are most valuable, and confirm the conviction as to what a woman's eye and judgment would be capable of effecting if the plan were to be extended under official authority. It is impossible that gentlemen (at any rate, those who are not medically trained) should have a knowledge or perception of all that is wanted

for the sick, or that nurses should be able to tell them of their various needs, and it is not surprising that they do not do so; otherwise, how is it that we find still so many deficiencies, and even an entire absence of so much that is required in these wards? A high standard of nursing and efficiency can only be maintained by the inspection of qualified and competent persons—an inspection that is at present not given.

And here let me name one drawback to the successful results of the inspector's visits—viz., that they are, I believe, invariably accompanied by the master or matron of the workhouse, frequently the former; and how, I would ask, can there be any freedom of speech or communication from the nurse when this is the case? It must be indeed a brave and independent spirit in a young woman thus to speak in the presence of her superior, when complaints of deficiencies would probably be her theme. I would suggest that all inspectors should be at liberty to see the officers they visit alone, without the presence of their superiors to check their freedom of speech. And again, can we expect that the condition of the patients and their beds can with propriety be examined by gentlemen who have never undertaken these duties in hospitals? Yet only too frequently the urgent need of such an inspection comes before us, in communications and revelations which could not possibly be given in these pages.

But again it may be asked, Do not the nurses work with and under the authority of the doctor appointed by the guardians for the care of the sick? It is true that there is such an officer in every union, but for various reasons they do not and cannot perform the duties of which we are urging the importance. The remuneration is small (the salary too often including the cost of medicines and all appliances), and it is not easy or popular for him to demand reforms of any kind from the authorities under whom he works. Those medical men who most value the trained nurses who carry out their orders would be the most willing to admit the desirability of a woman's inspection of their work.

I have spoken only of the needs of the sick; but there are other classes also that urgently call for inspection by women. The domestic arrangements of all classes and households, whether great or small, demand it. This truth was acted

upon twenty years ago when the appointment of a lady for the inspection of Poor Law schools was first made, and again resumed for a special class (of boarded-out children) a few years since. We cannot refrain from asking why has the conviction of the need been so sparingly acted upon? and how can one woman inspect the condition of these 5000 children scattered throughout the country, all urgently needing the inspection which women alone can give?

In alluding to the appointment of the late Mrs. Nassau Senior, more than twenty years ago, I would refer to a fact, probably now remembered by a few of my readers, that when her year of most devoted and admirable work was ended (a work that cost her her life), the additional duties of a permanent appointment were then laid upon her as "Inspector of Workhouses" as well as schools, the fulfilment of which was only stopped by her untimely death. I cannot help asking now, twenty years after, why so important a post was never filled up, either for workhouses or schools, when so many qualified women could have been found for it, and when so complete a success had been attained by the first experiment?

Those who are now urging the importance of women inspectors for the factories and workshops in which their own sex is employed are fully competent to enforce their own claims and desires. We can only add our hopes and wishes to theirs for a speedy and complete success in their efforts—a success which has, indeed, been partially granted by the appointment, during the last year, of ladies as inspectors of factories, and as sanitary inspectors also; the honor of which latter result is due to the same parish which had the courage to elect the first woman guardian—viz., Kensington. We have reason to believe that their work in both departments is highly and unanimously appreciated.

We have already named some institutions which call most loudly for these appointments; but we cannot conclude without adding two more important classes—our prisons and lunatic asylums—where, indeed, the need may be said to be even more urgent than elsewhere. Women guardians, whose duty it is to visit these sad abodes where their suffering and helpless sisters are confined, have been the first to point out the need of visiting inspectors of their own sex; and we can

only marvel that this conviction has been so long ignored or denied. Abundant testimony, from long experience, could be given on this point, with regard to both classes of institutions, but we cannot enter further upon it now.

In conclusion, we cannot help asking, Will the district and county councils of the future help us in these demands? Will the work of women be strengthened or swept away by the new order of things? All experience leads us to believe the former hope will be realized, for the world does not move backward.

With the help of educated women more largely organized and utilized as matrons, inspectors and guardians, with workhouses (no longer so misnamed) separated and arranged for all the different classes of inmates, what need would remain for sweeping away our existing machinery and creating a new and untried organization for providing help for the needy? Why should not even the "aged poor," now attracting so much sympathy and attention, as well as the sick and all other classes, find their fitting place in our national institutions, which, as was said two hundred years ago, "will answer all the ends of charity to the poor, in regard to their souls and bodies; they may be made, properly speaking, nurseries for religion, virtue and industry."—LOUISA TWINING, *in the Nineteenth Century for March*, 1894.

A LAWYER ENLIGHTENED.—"I presume, my good fellow, you are a laborer?" said a lawyer to a plainly dressed witness.

"You are right, I am a workman, sir," replied the witness, who was a civil engineer.

"Familiar with the use of the pick, shovel, and spade, I presume?"

"To some extent. Those are not the principal implements of my trade, though."

"Perhaps you will condescend to enlighten me as to your principal implements?"

"It is hardly worth while. You don't understand their nature or use."

"Probably not," loftily, "but I insist on knowing what they are."

"Brains."

SANITARY TOPOGRAPHY, CLIMATE AND MINERAL SPRINGS OF NEW JERSEY.

By A. N. Bell, A.M., M.D.

New Jersey is situated between the Delaware River and Bay and the Atlantic Ocean and Hudson River, comprised between the parallels of 38° 55′ and 41° north latitude and the meridians 73° 53′ and 75° 33′ west longitude from Greenwich. The extreme length of the State is 168 miles; greatest breadth, 59 miles, and its least, 32 miles. Its total area is 7576.68 square miles.

The northern half of the State is traversed by three distinct ranges of mountains; two of them, the Kittatinny, or Blue Mountains—called Shawangunk in New York—and the Highlands, belong to the Appalachian chain, while the third and lower range lies between the Highlands and the ocean, and is a part of the low mountain range which descends from Massachusetts, merges into the Catskills through New York, and enters New Jersey below the Palisades. The highest range is that of the Kittatinny, or Blue Mountains, which, at High Point, near the New York line, reaches an altitude of near 1800 feet. And thence it forms an almost unbroken ridge to the Delaware Water Gap. This range has a more rapid ascent on the east side than on the west, and its summit has a considerable extent of salubrious table lands. The Kittatinny Valley, lying between the range of the same name and the Highlands range, southeast of it, from 500 to 650 feet above the sea, about forty miles in length by ten in breadth, is remarkable for the beauty of the scenery, fertility and healthfulness. The Highlands range is composed of numerous ridges, with interposing valleys of great beauty, forming a belt about twenty miles wide at the New York line and ten miles wide on the Delaware. It may be crossed from one side to the other in a northeastern direction without encountering any very difficult ascents, though in any other direction numerous steep hills would be encountered. The highest of these ridges is Rutherford's Hill, on Hamburg Mountain, 1480 feet above sea level. Schooley's Mountain and the Musconetcong Mountain, both favorite summer resorts, are two of the many ridges of this range.

There are many pretty lakes in this northern section of the State, and for the most part their surroundings are healthful and enjoyable—good roads and delightful scenery round about, good hotels and excellent livery.

Greenwood Lake, in Passaic County—the largest—about eight miles long and nearly two miles in greatest width, lies one half in New Jersey and the other half in New York. Hopatcong is nearly as large as Greenwood, and Budd's about half as large. Green Pond is a particularly charming little lake, three miles long and half a mile wide, situated between Green Pond and Capers Mountains, 1044 feet above sea level.

West of the trap-rock formation of the Palisades, beginning a few miles above New York, there is a rocky ridge with several distinct elevations known as Orange, Fairmount and Mont Clair Mountains. Southwest of the Orange mountain range are ridges known as Rocky Hill, Ten-Mile Run, Long Hill, Sourland Mountain and Goat Hill, with an average summit level of about 160 feet; and further on Round Mountain and Pickle Mountain, elevations from 200 to 700 feet above sea level—all healthful, picturesque and convenient to, but too little used by the hundreds of thousands of the sickly denizens of Jersey City and New York, less than an hour away. Thence, excepting the Palisades, easterly and southerly, approximating the Atlantic and Delaware Bay, the surface is descending almost to a level. The soil is generally sandy, and some portions are shaded by pine groves and dry; but other portions, and frequently not far distant, are waterlogged and malarious.

The Palisades, notwithstanding their charming appearance as viewed from the Hudson, are well known to be malarious. This condition is due to the accumulation of stagnant water and to the decomposition of the vegetable débris which it holds, washed into the undrainable fissures of the trap-rock formation of that region at every rainfall.

The watershed of the State, as a whole, may be grouped into two systems, or trends—easterly to the Atlantic Ocean, and southerly to the Delaware River and Bay. Beginning at the north, on the sea-side slope, a narrow strip drains into the Hudson. But excepting this, on the west side of the

Palisades, the Hackensack River comes into the State from New York, and flows southerly through a narrow valley into Newark Bay, west of and parallel with the bay of New York, into which it flows. The Passaic River rises near the centre of the northern half of the State, flows northeast to its junction with the Pequannock, the Ridgewood and the Ramapo, taking in numerous streamlets on their course, then through a gap in the Highland range, and through Paterson, to its main valley southerly to Newark Bay. The Raritan, a still larger stream, also has its sources in the northern highlands of the State west of those of the Passaic, flows southerly to within about fifteen miles of the Delaware River, and then easterly to its mouth in Raritan Bay, south of Staten Island. The main streams draining into the Delaware River and Bay are Paulus Kill, Paquest Creek, Musconetcong River, Rancocus Creek, and Maurice River.

The climate of New Jersey as a whole is eminently healthful. Proximately to the Atlantic Ocean and Delaware Bay, on its eastern and southern portions, with but little elevation of these portions above the sea, the climate is considerably less subject to extreme cold than the more inland and elevated regions in the same latitude, and the thermometrical range is less, but more subject to extreme heat in summer. The meteorological record of Vineland for the ten years 1878–88, quoted by Dr. Isaac Hull Platt, in a paper on the "Pine Belt of New Jersey," read at the meeting of the American Climatological Association in 1889, as an approximate index of the climate of Lakewood, gives:

Mean annual temperature	53°.60
Maximum temperature	104°.00
Minimum, "	—10°.00
Mean relative humidity	72°.2
Barometer, annual mean pressure	29.92
Maximum pressure	30.76
Minimum, "	28.65
Rainfall, mean	47.41 inches.
" maximum	59.99 "
Cloudy days, average	107

Observations for a series of years at Brunswick, about the centre of the State, at an elevation of 76 feet, average as follows :

Mean annual temperature	51°.1
Maximum temperature	101°
Minimum "	—12°

Mineral Springs, as follows :

Chalybeate.

Schooley's Mountain Spring, Schooley's Mountain, Morris County. C. McIntyre, Jr., analyst.

Sodium carbonate, grains per gallon	0.58
Magnesium carbonate, " "	1.60
Iron carbonate, " "	0.58
Manganese,	trace.
Calcium carbonate, " "	1.42
Calcium sulphate, " "	1 68
Alumina, " "	0.14
Ammonia,	trace.
Silicic acid, " "	0.74
Sodium chloride, " "	0.43
Total	7.17

Saline.

Warwick Spring, Newark, Essex County. C. F. Chandler, analyst.

Sodium bicarbonate, grains per gallon	11.27
Magnesium bicarbonate," "	18.09
Iron bicarbonate, " "	2.72
Calcium bicarbonate, " "	41.82
Ammonium bicarbonate," "	18.43
Alumina, " "	0.70
Silicic acid, " "	0.82
Sodium chloride, " "	13.41
Potassium chloride, " "	5.40
Sodium phosphate, " "	0.09
Sodium bromide, potassium nitrate, organic matter	traces.
Total	112.75
Carbonic acid, cubic inches	101.03

"Chalybeate."

Spa Spring, Woodbridge, Middlesex County.

——?

Paint Spring, Kittatinny Mountain, near Delaware Water Gap, Delaware County.

——?

Kalium Springs, Collingswood, Camden County.

Artesian wells:

Saline.

At Passaic Rolling Mill, Paterson, Passaic County. New Jersey State Geologist's Report.

Calcium sulphate,	grains per gallon	.....	120.70
Sodium chloride,	" "	.....	408.06
Potassium chloride,	" "	.....	5.54
Calcium chloride,	" "	.....	278.32
Magnesium chloride,	" "	.....	109.44
Iron and aluminium chlorides,	" "	.....	7.00
Bromide		.....	trace.
Iodine		.....	trace.
Total		.....	929.46

Alkaline.

At Winslow, Camden County. New Jersey State Geological Report.

Silicic acid,	parts in 10,000	.....	.0140
Potash,	" "	.....	.0100
Soda,	" "	.....	.0554
Lime,	" "	.....	.0202
Magnesia,	" "	.....	.0079
Sulphuric acid,	" "	.....	.0027
Chlorine,	" "	.....	.0002
Carbonic acid,	" "	.....	.0520
Iron peroxide,	" "	.....	.0030
Total	" "	.....	.1654

Calcareous.

On Passaic River (Lister Brothers, Newark). New Jersey State Geologist's Report.

Magnesium carbonate,	grains	per gallon	1.55
Calcium sulphate,	"	"	106.98
Sodium sulphate,	"	"	15.94
Magnesium sulphate,	"	"	25.87
Sodium chloride,	"	"	2.47
Total	"	"	152.81

Calcareous.

Celluloid Works, Newark. New Jersey State Geological Report.

Magnesium carbonate,	grains	per gallon	6.10
Sodium sulphate,	"	"	11.70
Magnesium sulphate,	"	"	18.70
Calcium sulphate,	"	"	85.10
Silicic acid	"	"	2.00
Sodium chloride,	"	"	0.60
Total	"	"	124.20

Alkaline.

Limbech and Betz, Jersey City, Hudson County. New Jersey State Geological Report.

Soda,	grains	per gallon	39.50
Lime,	"	"	6.95
Magnesia,	"	"	9.36
Sulphuric acid,	"	"	4.11
Chlorine,	"	"	65.50
Total	"	"	125.42

Calcareous.

Bishop's Well, New Brunswick.

Magnesium sulphate,	grains	per gallon	30.88
Calcium sulphate,	"	"	148.62
Sodium chloride,	"	"	10.00
Total	"	"	189.50

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of February a mortality of 69, of which 41 were colored, and 18 were under five years of age. The annual death-rate per 1000 was 26.64.

Zymotic diseases caused 7 deaths, and consumption, 15.

ARKANSAS.—D. W. Holman, Secretary, Little Rock.

CALIFORNIA.—J. R. Laine, M.D., Secretary, Sacramento.

Reports from 89 cities, towns, villages and sanitary districts, aggregating a population of 810,140, show a mortality of 1011, or a death-rate of 12.4 per 1000 for February, or 14.88 per 1000 per annum.

There were 205 deaths from consumption, 98 from pneumonia, 31 from acute bronchitis, 10 from congestion of the lungs, 2 from diarrhœa, 4 from cholera infantum, 52 from other diseases of the stomach and bowels, 16 from diphtheria and croup, 7 from whooping-cough, 14 from typhoid-fever, 1 from malarial fevers, 25 from cancer, 2 from erysipelas, 86 from diseases of the heart, 4 from alcoholism, 8 from *la grippe*, and 446 from other causes.

San Francisco, 330,000: Total mortality, 448. Consumption, 95.

Sacramento, 30,000: Total mortality, 37. Consumption, 10.

Los Angeles, 65,000: Total mortality, 92. Consumption, 26.

CONNECTICUT.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

New Haven, 90,000: F. W. Wright, M.D., Health Officer, reports for the month of February a total mortality of 131—37 being under five years of age. The annual death-rate was

17.46 per 1000. There were 12 deaths from zymotic disease, and 21 from consumption.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the five weeks ending March 31st a mortality of 607, of which number 273 were of colored people, and 195 were under five years of age. The annual death-rate was 22.08 per 1000. There were 77 deaths from zymotic diseases, and 80 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of January, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 551; number of marriages reported, 460; number of deaths reported, 370; birth-rate per 1000 per annum, 16.89; death-rate per 1000 per annum, 11.34; average age of decedents, 33.54; number of deaths under five years of age, 90. Deaths from zymotic diseases numbered 72, and from consumption, 44.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000; A. R. Reynolds, M.D., Commissioner.

Small-pox appears to be epidemic; 126 cases were reported during the week ending April 14th.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

Some Dangerous Books.—The City Chemist of Indianapolis charges that the City Circulating Library circulates diseases as well as literature, the charge being based on the microscopic examination of a book from which his son had contracted diphtheria.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

The *Monthly Bulletin* makes the following report for February:

Clinton, 22,000 : Mortality, 16. Death-rate per 1000, 9.0.

Council Bluffs, 35,000 : Mortality, 26. Death-rate per 1000, 8.57.

Davenport, 34,000 : Mortality, 29. Death-rate per 1000, 9.6.

Des Moines, 75,846 : Mortality, 52. Death-rate per 1000, 9.4.

Dubuque, 40,000 : Mortality, 30. Death-rate per 1000, 8.78.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowlirg Green.

LOUISIANA.—W. R. Harnan, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for three weeks ending March 24th, 339 deaths, of which number 123 were among the colored people, and 89 of children under five years of age. There were 55 deaths due to zymotic diseases, and 43 to consumption. The annual death-rate was 23.21 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427 : James F. McShane, M.D., Commissioner, reports for February that the total deaths were 683, a decrease of 48, compared with the corresponding month of February, 1893. Of these 520 were whites and 163 colored ; a death-rate of 16.25 per 1000 for the former and 27.54 per 1000 for the latter. The death-rate per 1000 for the whole population was 18.01. Thirty-seven died from infectious diseases, 105 from consumption, 93 from pneumonia, 23 from bronchitis, 36 from influenza, and 8 from typhoid-fever. Two hundred and thirty-four, or 34.26 per cent of the total deaths, were in children under five years of age.

During the month of February 159 cases of infectious diseases were reported, the same as the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston. *Boston*, 487,397 : S. H. Durgin, M.D., Chairman.

There were 934 deaths reported in February, of which number 288 were under five years of age. The annual death-rate per 1000 was 22.99. There were 137 deaths from zymotic diseases, and 117 from consumption.

Cleanliness Against Boston Rules.—At the last meeting of the School Committee it was solemnly voted : " That permission be given to Mrs. Annie Fields to employ women to wash the floors of the Bowdoin school-house and the windows of the Chardon Court school-house."

This vote was necessary, because it is contrary to the School Committee's rules to wash the floors and windows of a Boston school-room oftener than once a year ! This sounds strange, but it is said to be true.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of March, 1894, compared with the preceding month, the prevailing direction of the wind was south (instead of southwest), the velocity was 1.5 miles per hour greater, the temperature was 17.78° higher, the rainfall at Lansing was .41 of an inch greater, the absolute humidity was much more, the relative humidity was slightly less, the day ozone was more, the night ozone was less, and the depth of water in the well at Lansing was two inches more.

For the month of March, 1894, compared with the preceding month, remittent-fever, inflammation of kidney, intermittent-fever, and diarrhœa increased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886–93, the prevailing direction of the wind was south (instead of northwest), the velocity was 3.2 miles per hour more, the temperature was 9.90° higher, the rainfall at Lansing was .77 of an inch less, the absolute humidity was much more, the relative humidity was much less, the day ozone was slightly more, the night ozone was less, and the depth of water in the well at Lansing was the same in the month of March, 1894.

Compared with the average for the month of March in the eight years 1886–93, erysipelas, intermittent-fever, diarrhœa, pneumonia, remittent-fever, pleuritis, and consumption were

less prevalent, and scarlet-fever was more prevalent in March, 1894.

Including reports by regular observers and others, scarlet-fever was reported present in Michigan in the month of March, 1894, at one hundred places; diphtheria at sixty-two places; measles at thirty-seven places; typhoid-fever at twenty-seven places, and small-pox at four places; consumption was reported present by 38 per cent of the observers making weekly card reports.

Reports from all sources show scarlet-fever reported at one place more; diphtheria at thirteen places more; measles at thirteen places more, and typhoid-fever at two places less than in the preceding month. Small-pox was reported at the same number of places.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing. The mortality record for January was 886 deaths from all causes. Annual death-rate per 1000, 7.89. The principal causes of death were: Consumption, 81; diphtheria, 42; croup, 13; pneumonia, 66; bronchitis, 24; typhoid-fever, 25; scarlatina, 20; diarrhœal diseases of children, 28.

St. Paul, 155,000: H. F. Hoyt, M.D., Commissioner.

During the month of February there were 102 deaths, representing an annual death-rate of 7.89 per 1000. Zymotic diseases caused 7 deaths, and consumption, 14. There were 27 deaths under five years of age.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

Omaha.—The Board of Health is moving against certain buildings and lots said to have become nuisances dangerous to the public health, while the public press cautions the Board to use great circumspection lest it wound the sensibilities and touch the purse-strings of those who maintain them.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—Ezra M. Hunt, M.D., Secretary, Trenton.

Paterson, 95,262 : J. L. Leal, M.D., Health Officer, reports for February, 148 deaths, 52 of which were under five years of age. The annual death-rate per 1000 was 18.6. There were 31 deaths from zymotic diseases, and 26 from consumption.

Typhoid-fever prevails in Montclair. The newspaper reports would have us believe that it has been contracted from the infected cows of a particular source of milk supply, instead of infected water added to the milk. "How and when the cows became infected is a mystery which the local health authorities are trying to solve."

NEW YORK.—Lewis Balch, M.D., Secretary, Albany.

The 9417 deaths reported during February represent a daily mortality of 336, against 353 in January and 342 in December, during all of which months there has been a moderate prevalence of influenza, causing 1000 deaths in December, and 1200 in January ; it appears to have caused about 500 deaths in February—the same as in February, 1893, when, however, the epidemic, instead of apparently receding, was slowly progressing, and culminated in March. The proportion of infant mortality is higher than it has been since October (31.2 per cent), but the number of deaths from the common infectious diseases is unusually small, being 1174 against 1355 in January, 1441 in December and 1277 in February, 1893. Typhoid-fever continues to show an unusually low prevalence in all parts of the State. The same is true of scarlet-fever. Measles continues an excessive prevalence in New York, but 19 of the 125 deaths being reported from the rest of the State. From diphtheria 400 of 527 deaths occurred in the maritime district, but it diminishes materially there.

Small-pox caused 52 deaths, the largest number in one month in ten years ; of these 27 were reported from New York, 20 from the Kings County Hospital and Brooklyn, 2 from Troy, and 1 each from Utica and Yonkers. Since March 1st it has developed in Manchester, Ontario County, whence it spread to Palmyra, Ontario and Walworth ; in Red Hook, Dutchess County, where a number of cases have occurred, and spread to Coxsackie ; in Binghamton, Mount Vernon, and Flatlands, Long Island ; in most of these localities it is lim-

ited to one family. There were 500 fewer deaths from acute respiratory diseases, and about the same as in February, 1893. The temperature for the month was 3° below the normal (27°), in January having been 5° above; the precipitation was excessive in all parts of the State.

New York, 1,925,569: Total deaths, 3354—1364 under five years. Death-rate, 22.70. Zymotic diseases per 1000 deaths from all causes, 175.30. Deaths from consumption, 389.

Brooklyn, 1,003,781: Total deaths, 1533—563 under five years. Death-rate, 20.89. Zymotic diseases per 1000 deaths from all causes, 118.75. Deaths from consumption, 174.

Syracuse, 91,944: Total deaths, 120—28 under five years. Death-rate, 15.75. Zymotic diseases per 1000 deaths from all causes, 116.50. From consumption, 21.

Albany, 98,000: Total deaths, 178—63 under five years. Death-rate, 23.60. Zymotic diseases per 1000 deaths from all causes, 101.20. From consumption, 19.

Buffalo, 300,000: Total deaths, 398—165 under five years. Death-rate, 17.28. Zymotic diseases per 1000 deaths from all causes, 127.50. From consumption, 29.

Typhoid-fever is epidemic in Buffalo, and has been since March 1st. Over 450 cases were reported during the month. The Buffalo *Medical Journal* for April reports that: "At various times during the month of February of this year the supply of water in the city reservoir was not more than one half or one quarter of the usual quantity. In order to increase this deficient supply water was pumped from a shallow portion of the river near its margin, where its slow-moving currents are habitually befouled by the sluggish and sewage-laden waters of the Buffalo harbor, the two being at this place only nominally divided, and that by a slender wall of loose masonry —the Bird Island pier."

Rochester, 150,000: Total deaths, 162—37 under five years. Death-rate, 14.08. Zymotic diseases per 1000 deaths from all causes, 75.00. From consumption, 15.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the North Carolina Board of Health we find that during February there were 143 deaths in 28

towns, aggregating 144,954 population; 85 were of colored people, and 32 were of children under five years of age.

The annual death-rates were 8.1 per 1000 for the white population, 17.4 for the colored population, and 11.8 for the total. There were 21 deaths from consumption, 3 from typhoid-fever, 17 from pneumonia, and 6 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 10. Annual death-rate, 10.0 per 1000.

Charlotte, 14,000: Total deaths, 9. Annual death-rate, 7.7 per 1000.

Raleigh, 15,000: Total deaths, 27. Annual death-rate, 21.6 per 1000.

Wilmington, 22,000: Total deaths, 35. Annual death-rate, 19.1 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

The *Monthly Sanitary Record* furnished the following report for the month of January: Forty-seven cities and towns, having an aggregate population of 1,190,667, returned 1692 deaths, of which number 431 were under five years of age. The annual death-rate was 16.19 per 1000. Zymotic diseases caused 334 deaths, and consumption, 207.

Seventy-six villages, with an aggregate population of 139,813, returned 199 deaths, of which number 36 were under five years of age. The annual death-rate was 17.09 per 1000. Zymotic diseases caused 34 deaths, and consumption, 33.

Columbus is reported to be sadly afflicted with tenement-houses crowded to their utmost capacity by the poorer classes. This tendency of people to herd in cheap quarters is to save paying rent; and the fact that many laborers are not only out of work, but have neither credit nor money is calamitous.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

Philadelphia, 1,139,457: M. Veale, Health Officer, reports: In the five weeks ending March 31st there were 2198 deaths, of which number 612 were under five years of age. Annual death-rate, 20.1 per 1000. Deaths from consumption numbered 278.

Pittsburg, 264,000: J. Guy McCandless, M.D., Registrar, reports: During the five weeks ending March 31st there were 476 deaths, of which 182 were under five years of age. Annual death-rate, 18.58 per 1000. Zymotic diseases caused 74 deaths, and consumption, 46.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

The number of deaths recorded in the towns and cities from which returns have been received, was 569 in a population of 345,506. The annual death-rate was 17.52 in every 1000 of the population, still-born included.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of February, were: Acute lung diseases, *la grippe*, consumption, rheumatism, whooping-cough, mumps, typhoid-fever, measles, malarial-fever, chicken-pox, scarlet-fever, diphtheria, small-pox, and erysipelas.

Chattanooga, 27,000 white and 13,000 colored: Total deaths, 46—30 of which were colored, and 13 under five years of age. Annual death-rates, 7.11 for the white population, and 27.69 for the colored, per 1000.

Memphis, 32,376 white and 25,575 colored: Total deaths, 113—69 of which were colored, and 7 under five years of age. Annual death-rates, 16.30 white, and 32.37 colored, per 1000.

Knoxville, 31,273 white and 9112 colored: Total deaths, 47—14 of which were colored, and 13 under five years of age. Annual death-rates, 12.66 white, and 18.43 colored, per 1000.

Nashville, 54,595 white, 33,159 colored: Total deaths, 105—49 of which were colored, and 34 under five years of age. Annual death-rates, 12.30 white, and 17.72 colored, per 1000.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

Seattle.—There is a contest between the Board of Education and the Board of Health over the sanitation of the public schools.

The School Board has equipped the Pacific, Cascade and Day schools with the system of dry closets in which a current of hot air is passed through the closets, producing a desiccating effect. The reasons given by the Board for adopting dry-closet systems are that all offensive odors are removed; that there is no dirt or noise; that the closets are always clean, and that the cost of operation is small.

The Board of Health, however, insists upon what has been abundantly demonstrated—that this system of heating is a fraud, dangerous to the health of the schools; that the proper method of sanitation is the water-closet system, by which all the bacilli are carried into the sewers and thence into the sea. This is the only system recognized by the city ordinance, which requires that all closets be connected with the sewers.

The Board of Health, therefore, is complying with the strict letter of the law in seeking to compel the Board of Education to connect the closets of the schools with the sewers, and at the same time is enforcing its general views on sanitation.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—J. T. Reeve, M.D., Appleton.

Dr. U. O. B. Wingate, of Milwaukee, who is to succed Dr. J. T. Reeve, of Appleton, as Secretary of the State Board of Health, attended a special meeting of the State Board at Fort Howard on the 7th ult., and stopped over to confer with Dr. Reeve regarding the removal of the secretary's office to Milwaukee, which takes place after Dr. Reeve's resignation as secretary takes effect, at the June meeting in Milwaukee.

Dr. Reeve has been secretary ever since the organization of the Board eighteen years ago, and resigned on account of a desire to be relieved from the pressure of work under which he

has been laboring many years. Dr. Wingate states that the office of secretary will be conducted on the same efficient lines laid down by his predecessor.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 580,371 : Albert B. Martinez, Director-General of Municipal Statistics.

During the month of December, 1893, there were reported 1583 deaths, of which 1063 were under five years of age. The annual death-rate per 1000 was 32.0. From epidemic diseases there were 92 deaths, and from consumption, 86.

THE BOARD OF HEALTH OF HAMBURG recommends the tearing down of all the houses in that city that are defective from a sanitary point of view. It is estimated that the cost of the procedure would be about $50,000,000, and that the city fathers are aghast at the expense, and decline to purge the city at that rate.

CHOLERA is reported prevalent in Constantinople. All attempts to conceal the fact become futile when, among many victims, the highest dignitaries in the city are stricken down. The Government officials seem to know nothing of modern methods of sanitation, and care less. Turkey passes on into Europe the pests that come from the east.

DANGEROUS PEOPLE.—"If a man has contagions disease in his house and fails to give due notice thereof, or allows people to come into his house without sufficient warning, or in any avoidable way exposes the public to contagion on his own premises, he is liable to indictment at the common law" (Meeker *vs.* Van Rensselaer, 15 ; Wend., 397 ; State *vs.* Purse, 4 ; McCord, 472 ; People *vs.* Townsend, 3 ; Hill, N. Y., 479 ; Welch *vs.* Stowell, 2 ; Dong., Mich., 332 ; Moffett *vs.* Brewer, 1 ; Greene, Iowa, 348 ; Barclay *vs.* Common-wealth, 1 ; Casey, 503).

MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

Cocaine Causes a Sudden Death.—M. Reclus presented a report (*La France Médicale*) on March 21st to the Société de Chirurgie of a case of poisoning by cocaine observed by a practitioner in the country An old man, seventy-two years of age, was attacked with complete retention of urine. After frequently puncturing the bladder and a number of fruitless attempts to pass the catheter, it was determined to perform the sub-pubic section ; but, preparatory to the operation, in order to pass the catheter, an injection of 20 grammes of a 5 per cent. solution was made into the urethra of this nervous, irritable patient. This dose, supposed to be moderate by the operator—that is, 1 gramme of cocaine, is one which has been called a "*dose folle*" (a most imprudent dose). The author adds that in this case it was not a hypodermic injection, but simply the usual injection into the urethra, which placed it in simple contact with the mucous surface. It should not be forgotten that absorption very often takes place through the mucous surface, and, without recalling the case of Kolmine or the cases of Necker, it is certain that when 0 gramme .80 was sufficient to cause death, it was absolute folly to administer 1 gramme (100 centigrammes) of cocaine to a patient, even though it was placed simply in contact with the mucous membrane. The patient, says our correspondent, suffered also from a sclerotic condition of the arteries—an additional reason for increased precaution ; but with proper precaution, in my judgment, the writer says, the sclerotic condition of the arteries rendered the use of cocaine preferable to chloroform.

Heart and Stomach Troubles Caused by Vicious Attitudes in School.—M. Motais d'Angers, in a report (*La France Médicale*) to the Académie de Médecine on February 27th, remarked that the unnatural attitude tolerated in nearly all schools and colleges, and even enforced in some of them,

is one of the most frequent causes of myopia. It is also the direct cause of a great number of the deformities of the spine.

To this list, already large, M. Motais adds dyspepsia and functional troubles of the heart.

In the vicious attitude referred to, the scholar, seated on the left ischium, rests always on the left elbow, inclines forward and partly to the left, and almost lies on his book.

By this lateral inclination the floating ribs on the left side are lowered even to the crest of the ileum ; the stomach is then pressed down on the descending colon. On account of the curve forward the abdominal walls form a transverse fold ; the anterior face of the stomach is thrown into the same degree of flexion. This causes a mechanical obstruction of the movements of the organ.

On the other hand, the curve forward of the thorax brings the ribs close together, diminishes the intercostal spaces, and, consequently, the capacity of the thorax. The excessive flexion and tension of the neck compresses the large vessels of that region. All these distortions give rise to obstruction of the heart and lungs, to palpitations and to dyspnœa.

The attitude of the student in our schools and colleges is, then, one of the most fruitful causes of dyspepsia and of palpitations. The same remarks apply to adults engaged in intellectual work, to clerks in offices, to workmen of sedentary habits, whose places of business are but a short distance from their dwellings. The obstruction to the regular action of the heart and stomach is increased as the individual advances in age.

In all these cases M. Motais has observed a constant improvement in dyspeptics and those suffering from heart disease by changing the position, especially at the desk, and by maintaining the erect position during work. It is an additional reason for the introduction of reforms in school accommodations, and in particular for improvements in the seats and desks of scholars and accountants.

MENINGEAL HEMORRHAGE CAUSED BY MALIGNANT PUSTULE.—MM. Roger and Crochet presented on March 2d (*La France Médicale*) to the Société Médicale des Hôpitaux a case extremely interesting in a threefold point of view—clinical,

anatomical and microbic. The patient was a male, treated for erysipelas, which was developed around a malignant pustule ; the disease appeared four days before, but the generally excellent condition of the patient led to a very favorable prognosis But soon after the visit the patient suddenly lost consciousness, his limbs became rigid, the extremities cyanosed and cold, the heart became feeble and the pulsations frequent (128), the respiration accelerated (36), and insensibility was complete. After a few convulsive movements the patient fell into a comatose condition three hours after the commencement of the fatal attack.

The autopsy revealed an abundant serous infiltration in the region of the neck, and also into the pectoral muscles, into the cellular tissue of the mediastinum ; the blood was thick and pitchy and the color of sepia ; the viscera were greatly congested, and from them a dark, blackish blood oozed freely. The most remarkable phenomenon found was seated in the meninges : the whole of the cerebral portion of the pia mater was transformed into a tissue resembling a napkin stained with blood, which completely surrounded the brain, the bulb, the protuberance, and the cerebellum ; the meninges of the spine were congested in the lower part of the dorsal region and the lumbar region as well ; a hemorrhage was found which formed a perfect ring around the chord.

The bacteriological examination enabled us to determine the existence of a double infection ; one, due to streptococcus, was local ; the other, to the bacteria of the pustule, was general ; the microbe of the pustule was found in abundance, and to the exclusion of the streptococcus, in the blood, in the viscera, and in the meninges. The presence of hemorrhagic effusion has been found in the meninges during the course of pustular affections, but never before did the lesion acquire so great an extension as was found to exist in the present case.

SULFONAL AS A RELIABLE HYPNOTIC.—Sulfonal has long passed the experimental stage, and is now esteemed one of our best hypnotics. The qualities which render it a desirable sleep-producer are its reliability and safety, its efficacy in a large variety of conditions of sleeplessness, the facts that it is practically free from the danger of a habit and that the sleep

produced by it closely resembles normal sleep, and possesses none of the disagreeable features of sleep produced by narcotic drugs. It is true that from time to time cases have been reported in which unpleasant and even dangerous effects have been attributed to the remedy, but in most instances this unfavorable action must be ascribed to its administration in excessive doses or in an improper manner, or to rare idiosyncrasy on the part of the patient. It should be borne in mind that to obtain a prompt, safe, and agreeable effect from sulfonal, it should always be given in hot solution cautiously cooled to a drinkable temperature, so as to avoid precipitation. By adopting this plan not only is a smaller quantity of the drug required, but sleep occurs much more rapidly and is not followed by after effects. It should further be remembered that little can be expected from sulfonal in the presence of severe pain, although even in this condition it has been found of value in combination with morphia. Sulfonal does not weaken the heart action, and hence it forms an excellent hypnotic in acute debilitating diseases attended with insomnia. In discussing the present treatment of pneumonia, Dr. Peabody (*Medical Record*, December 16th, 1893) expresses his preference for sulfonal over opium and chloral, and these views are shared by a large number of the profession. "In those cases of dementia with insomnia which the practitioner is not infrequently called upon to treat, this remedy," according to Dr. J. V. Anglim (Montreal *Medical Journal*, December, 1893), "is often successful and ordinarily safe. An increased dose is not needed, the second acting better than the first."

THE BEST TREATMENT OF THE PRIMARY SORE OF SYPHILIS, according to some recent investigations (Willard Parker Worcester, M.D., New York), appears to be by the use of peroxide of hydrogen. Several cases are cited, of which the following one is selected as typical:

"Mr. K., aged thirty-eight years, came to me January 29th, 1891, with a large sloughing single chancre. . . . Sprayed it with full strength solution (15 volumes) of peroxide of hydrogen medicinal (Marchand's), at 60 pounds pressure, and dressed with iodol powder, and continued the same treatment every morning at seven o'clock.

" February 20th, sprayed it as above ; sore now only skin deep, and continued till February 23d ; sore healed ; duration of treatment, 25 days.

" The pressure of the spray (60 pounds), which is one of the most important factors in the whole method, not only cleanses and produces thorough asepsis of it, killing the germs of the disease at the very bottom of the ulcer, but the oxygen of the peroxide aerates the blood through the capillaries, and arrests the progress of the disease at the nearest possible point, allowing the process of repair to commence as soon as possible, according to the severity of the disease, with the least loss and destruction of tissue and consequent scar. It must be particularly understood that, in using this treatment, all instruments, spray-tubes and bottles must be made of either glass or hard rubber, for the reason that metals, with one or two exceptions, coming in contact with the peroxide, will destroy its component parts and render it useless ; and I have found also a great difference in the results if the peroxide is fresh or otherwise. The first effect of a spray of peroxide upon the ulcer is to deposit upon it a thick film of albumen ; this should be allowed to remain for about half a minute or less ; then continue the spraying till a large tubeful has been used (one ounce) ; as the sore progresses the spraying causes a good flow of rich arterial blood upon it, which merely shows returning healthy conditions.

" The treatment is entirely painless, and the patients do not experience any annoyance or inconvenience whatever while carrying the disease, and freely express themselves as well pleased with its effect.

" No internal medication during this stage is given. The iodol powder is used only as an antiseptic, to protect the sore from external influences until it is sprayed again the next day, keeping the sore in as good a condition as it is left by the spraying, which must be done once every day until the ulcer is healed.

" This method of the treatment of chancre has been, in my hands, the best and most successful of all methods that I have heretofore adopted."—*Journal of Cutaneous and Genito-Urinary Diseases, February*, 1894.

EDITOR'S TABLE.

SANITARIAN, MAY NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

SOME OF BROOKLYN'S CHRONIC NUISANCES, WITH A GLANCE AT THE RESULTS.

THE above cut represents another section of the whilom Bushwick Creek partially depicted in these pages just one year ago. The portion described at that time, limited to the outfall of three sewers upon the mud flat of an old creek bed, in process of being filled up with foul street dirt, still obtains in aggravated proportions.

That portion to which attention is now invited is a unique timber-yard, comprising an area of two or three acres of the mud flat, just at the mouth of the whilom creek, upon which the timber appears to have been grounded, as if purposely to obstruct the flow of the sewage from the foul soil and the three open sewers which discharge into it above. This sewage irrigation and *septic* treatment of timber—for commercial purposes—has been maintained for several years, as an aid, pur-

posely or otherwise, to the filling-in process of the old creek bed under the auspices of the Department of City Works.

BROOKLYN, April 9, 1894.

Editor of THE SANITARIAN :

DEAR SIR : Replying to your request for a copy of the plan for cleansing and keeping clean Gowanus Canal, that I submitted to the Commissioner of Public Works in 1887, it was similar in the main to the Tidal Drains of Charleston, S. C., described in your paper on the Relation of the Mechanical Arts to Preventive Medicine (SANITARIAN, Volume XXVI.).

The Gowanus and Wallabout canals and Newtown Creek are arms of the sea, of great commercial value to Brooklyn, and I think they could be maintained without offence to the senses or danger to the public health by dredging the dead ends and by a system of canal locks to form flushing basins. This could easily be done, as the mean high tides here are about 4 feet 6 inches, and this head of water retained in the upper part of these tributaries, being let out from *bottoms of the gates* at the last hour of the ebb, would cause a thorough flushing out below, and a cleansing flow from above them. Possibly those owning along the shores of these waters would unite in defraying a portion of the outlay, for certainly such improvements would add greatly to the value of these properties.

LOUIS C. D'HOMERGUE, M.D.

The emanations from the filthy soil and porous mass of putrefying timber banks, saturated with sewage, which invest these waterways, are an incomparably more prolific source of the foul odors than any, or indeed all, of the manufactories and trades that are or have been conducted in their vicinity ; and no amount of dredging or flushing can possibly divest this chief source of the foul emanations from its danger to the public health so long as it continues to be perpetuated, as it has been hitherto, by continuous addition to the vile compost by the permission of the city authorities.

These nuisances have been the subject of numerous " investigations" by the city authorities, and the creek in particular by the State Board of Health almost every year since the Board was organized. Yet they continue a standing menace

to the health of the people and a public disgrace. A few factories from which foul odors have emanated, but more easily discovered by sight than smell, have been compelled to move from the neighorhood of Newtown Creek to that of Gowanus Canal, whose stench, like that of the creek, obscures them; hence their absence from the former place, as their presence in the latter, is recognizable by the sense of sight only, scarcely at all by the smell. Indeed, it seems to have been proven to the satisfaction of the courts that, however malodorous the emanations of a glue factory may be elsewhere, in the vicinity of Newtown Creek they are delicious. And the same may be said of the tartar works now on the canal, driven hence from the creek because they were visible above its banks. The stench of the canal, *per se*, abounds to such a degree as to obscure factory odors that would otherwise be a just cause of complaint. Thus it has been for many years with these cumulative nuisances, and will continue so long as the civil authorities are purblind to the sewage-soaked and putrefying logs with which they are banked.

Every decent kitchen maid knows that even a wet floor-cloth, left half covered in the bottom of a wooden pail during warm weather, will, after a day or two, begin to putrefy and speedily render the whole kitchen malodorous and unwholesome. And every house-owner in the city is required to maintain a stone pavement to and including the curb. Yet the siding and banks—and wharves for the most part—of these waterways, of great commercial value to their owners, and indirectly to the city, consist of thousands of tons of sewage-saturated and putrefying logs between the foul soil on one side and foul water on the other—the soil, logs, and water all reeking stench and promoting the propagation of disease. And the people encouraged to think that the stench emanates from the factories!

Year after year, ay, continuously throughout the year, the thrifty owners of these water fronts are permitted to maintain them by prying out the rotten logs when they will no longer serve to support the bank, and supplying their places with others to perpetuate the process interminably. Yet no city-works commissioner or other official authority, however keen his appreciation of the necessity of a non-absorbent sewer

culvert made of stone—even for the street-surface sewage—over what it would be made of wood, ever appears to have thought of its immensely greater necessity to these so much more extended receptacles of sewage from its prime sources of intensity and danger. Surely it is a legitimate subject of inquiry for every citizen to know of the city authorities why these water-front owners should be privileged to maintain such nuisances.

And of another privileged class—*stable keepers.*

It would be an insult to the intelligence of the people of Brooklyn to essay on the danger of storing excrementitious filth until it putrefies, and handling the putrefying mass. But it really seems as if the public authorities at least, who are responsible for preventable and permissible dangers to the public health, regard stable manure as something else. It is, indeed, something *more* than other excrementitious filth, because it ordinarily comprehends a larger proportion of nitrogen—the most dangerous element of excrementitious matter—it more readily putrefies, and is proportionally more subject to the invasion of disease germs and a more facile means of propagating them than any other. Fortunately we are able to quickly recognize the putrefaction of stable manure by the odor of the ammoniacal gas evolved; although, on account of the profusion of the vaults for the storage of manure until it putrefies, the manner of emptying them and carting the manure through the streets when it is in that state, we are far from being able to escape its dangers; for these putrefaction vaults and their congeners of the stables in various degrees are scattered throughout the city—and so is diphtheria and its congeners, diseases well known to be promoted by these conditions.

Why the storage of manure until it putrefies and becomes dangerous to health, and is then permitted to be shovelled from the vaults upon the pavements, thence pitched into carts and scattered through the streets; why manure vaults should not be prohibited; why stable-keepers should not be required to remove the manure before it putrefies; to load their carts *in* the stables and secure the manure from scattering through the streets; why, in short, they should be privileged, under any circumstances, to so conduct their occupation as to make

it dangerous to the public health, are questions with which every reader of THE SANITARIAN is familiar; and they would not again be repeated but for the hope that the new *régime* with which Brooklyn has recently been favored would give them heed. On referring to these conditions a year ago, the writer took occasion to sum up the mortality from diphtheria during the preceding ten years. It was found to have been 767 annually! Last year the proportion was not kept up; there were only 607 deaths reported from diphtheria. But the proportional increase in the number this year—306 deaths reported from it during the first fifteen weeks ending April 14th—shows no abatement of the causes.

The mortality statistics of New York show that the diseases which produce the greatest mortality in that city—diarrhœal diseases, phthisis and acute respiratory diseases—are considerably more prevalent or more fatal near stables than elsewhere; that the deaths from diphtheria and croup, measles, scarlet-fever, diarrhœal diseases, erysipelas, puerperal-fever, consumption and other tuberculous diseases, meningitis, convulsive diseases, bronchitis and pneumonia, in the aggregate are one and a half per cent greater in the vicinity of stables than elsewhere. Yet the sanitary condition of the stables in New York is eminently superior to that of Brooklyn; manure vaults under the sidewalks are prohibited; no manure is allowed to be thrown upon or to fall or remain in or on any street or sidewalk or ground near any stable, and all manure carts are required to be tight and tightly covered.

THE INTERNATIONAL SANITARY CONFERENCE.

The details of the agreement signed April 4th, 1894, by the International Sanitary Convention are reassuring.

Three series of precautionary measures were adopted by the Conference, the first referring to the measures to be taken at ports in India from which pilgrims for Mecca embark, the details as to disinfection, medical inspection, the allotment of space to each pilgrim on board ship, etc., being carefully defined. All ships carrying pilgrims will be required to have a competent physician and an adequate supply of wholesome drinking water. The second series provide for the reorganization of the Turkish lazarettos in the Red Sea. The quaran-

tine of pilgrim ships from India formerly varied from two to seven weeks, whether the vessel had a clean bill of health or not. By the terms of the new convention a ship with a clean bill of health will be delayed only long enough for medical inspection, and contaminated or suspected vessels will not be detained in quarantine more than five days. The third series relate to precautionary measures in the matter of the return of pilgrims from Mecca by the lazaretto of Tor, in Arabia Petrea, on the east shore of the Gulf of Suez.

The Conference has earnestly urged the Turkish Government to reorganize its sanitary administration thoroughly, with a view of preventing the introduction of cholera into Europe by land.

If the decisions and recommendations of the Conference are carried out it is believed that the importation of cholera into the United States and Europe will be effectually checked. The discussions and the decisions arrived at by the Dresden and Venice conventions in regard to matters of quarantine formed the basis of the deliberations of the delegates to the Conference.

HEALTH OFFICER OF THE PORT OF NEW YORK—A MERITED TRIBUTE.—"It is within the personal knowledge of *The Recorder* that, while the World's Fair was in progress, the expression of opinion was placed on record at a gathering of its representative managers—which also included the representatives of the Government at Washington and of many foreign governments—that if Dr. Jenkins had not, in 1892, succeeded in holding the European pestilence at bay in the lower harbor of this city the Fair would in all probability have been a failure. This, we believe, is the first time this great compliment to the efficiency of Dr. Jenkins has appeared in print. He is an ideal man for the place he holds, and he should be confirmed by the Senate. No one of his predecessors has filled the office one half as well as he has done."

MICROBES IN ICE.—M. Riche, at the request of the French Government, has recently made a study of the microbes to be found in ice. It was found that ice which to the eye is perfectly transparent, and apparently free from any sort of im-

purity, may contain more than seven times the amount of organic matter which is allowable in water for drinking purposes. One specimen of ice was found to contain 175,000 colonies of germs for each cubic centimetre (¼ drachm). This specimen contained more than forty times the amount of organic matter allowable. This subject is one which ought to receive more attention from sanitary officials than it does at the present time.

THE DRINK BILL OF THE UNITED STATES is four times as great as the entire cost of all the life insurance that is carried by the citizens of this country when the one is compared with the other. This statement seems almost incredible. The one represents decay, discredit, degradation and death; while the other represents homes saved, children educated, positions maintained, and every other good thing that naturally follows in the wake of thoughtful competence. Why the men of this country should be willing to pay four times as much for the evil as they are willing to pay for the good, is one of the anomalies of human life.

We are indebted for our statistics to a statement made by Hon. Emory Smith in his speech at the Life Insurance banquet last month. At the same time, he said that the "weed" costs the United States more than life insurance does, and as long as these facts continued, he concluded that there was still a very wide field for the missionary work of the life-insurance agent.—*The Insurance Monitor.*

PATENT MEDICINES.—A bill lately introduced into the legislature provides that every manufacturer of a patent medicine sold in Iowa shall have printed on the bottle, package or wrapper, a correct statement of the ingredients in the medicine; and that no seller of drugs shall offer for sale such patent medicines unless the formula of their preparation is printed as described. The act covers manufacturers in Iowa as well as out. By its provisions, if a manufacturer fails to comply with it he cannot sell his medicines in Iowa. The penalty for violation, whether on the part of the retail drug store keeper or the manufacturer, is punishable by a maximum fine of $100 or six months in the penitentiary.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

THE INTERNATIONAL MEDICAL ANNUAL, 1894. A COMPLETE WORK OF REFERENCE FOR MEDICAL PRACTITIONERS. THE CONJOINT AUTHORSHIP OF THIRTY-NINE DISTINGUISHED AMERICAN, BRITISH AND CONTINENTAL AUTHORITIES. Pp. 704. Price, $2.75. New York: E. B. Treat.

This, the twelfth yearly issue of the "Medical Annual," brings before the practitioner in the best form for rapid reference a very complete summary of the progress of medical knowledge throughout the world; a large number of original articles and reviews from the pens of American and European authors on the subjects with which their names are especially associated, and many prescriptions suggested by recently acquired knowledge in the treatment of disease. In short, the design of the book is, while not neglecting the specialist, to bring the general practitioner into direct communication with those who are advancing the science of medicine, no matter in what direction, so that he may be furnished with all that is worthy of preservation as reliable aids in his daily work.

Neither trouble nor expense has been spared to render the book valuable to the profession in every possible way. It is admirably illustrated with colored plates and numerous cuts; type, paper and binding excellent, and published at a price which should render it universally available.

DISEASES OF WOMEN. By HENRY J. GARRIGUES, A.M., M.D., Professor of Obstetrics in the New York Post-Graduate Medical School and Hospital; Gynæcologist to St. Mark's Hospital in New York City; Gynæcologist to the German Dispensary in the City of New York; Consulting Obstetric

Surgeon to the New York Maternity Hospital, etc. 8vo, pp. 700, with 310 engravings and colored plates. Prices: cloth, $4; sheep, $5 net. Philadelphia: W. B. Saunders.

The term "Diseases of Women," or Gynæcology, as understood by this work, designates affections of the female genital organs as distinguished from pregnancy, child-birth and the puerperal state.

This work is intended as a text-book for students and a manual for general practitioners. It is a very thorough digest of the subject, and will doubtless meet the requirements of both.

Dr. Garrigues divides his subject into two parts—General and Special. The first section treats, with their cognate subdivisions, the Development of the Female Genitals; Anatomy of the Female Pelvic Organs; Physiology; Etiology, Examination and Treatment in General; Abnormal Menstruation and Metrorrhagia; and Leucorrhea. The Special division includes Diseases of the Vulva; of the Perineum; of the Vagina; of the Uterus; of the Fallopian Tubes; of the Ovaries; of the Pelvis; and an appendix on Sterility. The concise and clear style, the distribution of the material, the gradual advance from embryology, anatomy and physiology to the description of the diseases of the different organs, the unbiassed way in which the different modes of treatment are set forth, together with its moderate price, will doubtless recommend the use of this work in undergraduate colleges.

The illustrations form a complete atlas for studying the embryology and anatomy of the female genitalia, besides exemplifying, whenever needed, morbid conditions, instruments, apparatus and operations, many of the cuts being reproductions of photographs from specimens obtained in the author's own practice.

A MANUAL OF THERAPEUTICS. By A. A. STEVENS, A.M., M.D., Lecturer on Terminology and Instructor in Physical Diagnosis in the University of Pennsylvania; Demonstrator of Pathology in the Woman's Medical College, Philadelphia; Physician to St. Mary's Hospital and to the Southeastern Dispensary; Pathologist to St. Agnes's Hospital. 12mo, pp. 435. Price, $2.25. Philadelphia: W. B. Saunders.

A concise summary of the subject well adapted to its purpose for students, especially as an introduction to or remembrancer of more extended systematic study of larger works.

GAS LIGHTING AND GAS FITTING. Including Specifications and Rules for Gas Piping, Notes on the Advantages of Gas for Cooking and Heating, and Useful Hints to Gas Consumers; a Pocket-book for Gas Companies, Gas Engineers and Gas Fitters; for Manufacturers of Gas Fixtures and Dealers in Gas Appliances; for Gas Consumers, Architects and Builders, Health Officers and Sanitary Inspectors. Second Edition, rewritten and enlarged. By WILLIAM PAUL GERHARD, C.E., Consulting Engineer for Sanitary Works, New York. 16mo. Price, 50 cents. New York: D. Van Nostrand.

This is a particularly useful manual or pocket-book for all to whom it is addressed on the title-page—to whom we commend it.

THE FEATURES WHICH DISTINGUISH EPIDEMIC ROSEOLA (*Rose-rash*) FROM MEASLES AND FROM SCARLET-FEVER. A paper read before the members of the Medical Officers of Schools' Association, February 21st, 1894, by CLEMENT DUKES, M.D., B.S., London, Member of the Royal College of Physicians; Physician to Rugby School, etc. Pamphlet. Price, one shilling. London: J. A. Churchill.

ANNUAL REPORT OF THE CITY ENGINEER OF THE CITY OF OMAHA.

A very comprehensive yet concise report, illustrated by diagrams and maps, showing and describing the kind and progress of public works in Omaha, and their cost to date, January 1st, 1894.

THE PSYCHOLOGY OF ATTENTION. By TH. RIBOT, Professor of Comparative and Experimental Psychology in the College of France. Price, paper, 25 cents. Chicago: The Open Court Publishing Company.

A terse statement of the subject, of educational value to all who would understand the mechanism of thought and learn how to apply it most effectually; and equally to all who

would understand the relation of mental aberrations to pathological conditions at their outset. It is divided into three chapters: Spontaneous or Natural Attention; Voluntary or Artificial Attention, and the Morbid States of Attention. And a summing up: Attention Dependent upon Emotional States; Emotional Life Reducible to Needs; Tendencies, etc., what these states imply, and the most general physical condition of attention.

MATTHEWS' MEDICAL QUARTERLY: A Journal devoted to Diseases of the Rectum, Gastro-Intestinal Disease, and Rectal and Gastro-Intestinal Surgery. Price, $2 a year. Louisville: Joseph M. Matthews, M.D., Editor and Proprietor.

We cordially welcome this specialty in journalism because it evidently includes—though the editor does not so announce in his prospectus—the diseases of the navel, and thus forestalls, if indeed it does not, as we hope, indefinitely postpone a specialty on that physiological relic. This thought is brought to mind by the remark of an eminent general practitioner, in our hearing, some time ago, that the navel only now remained for his field of practice—so completely had the specialists taken up everything else. However that may be, judged by the two numbers before us, no general practitioner, medical or surgical, or of any of the specialists who takes *Matthews' Quarterly*, will go amiss, for it comprehends literature and knowledge of practical utility to them all.

WALDEN'S MONTHLY; A Journal Devoted to all Outdoor Sports and Pastimes, Indoor Games and Exercises. Edited by HENRY CHADWICK. Price, $1 per annum. New York: the Walden Press.

Henry Chadwick, editor of *Walden's Monthly*, is the brother of the late Sir Edwin Chadwick, so well known to all the readers of THE SANITARIAN. Among Sir Edwin's most signal advances were the regulations of labor and study in factories and schools, providing periods for daily relaxation and recreation, which regulations were soon observed to be followed by most beneficial results—improved health, improved study, better work and more of it. Henry Chadwick was at that time, and had been for several years before, devoting atten-

tion to outdoor sports and pastimes, under such regulations as to be now everywhere recognized as important sanitary forces among the laboring classes and in college life. How far the efforts of these brothers were mutually helpful in the same direction is best known to those who have known them longest.

For nearly twenty years Sir Edwin Chadwick was one of our most esteemed correspondents and a frequent contributor to THE SANITARIAN. With Henry Chadwick we have enjoyed the pleasure of personal acquaintance for nearly forty years. His promise, in speaking for himself editorially, is fully justified by what we know of him : That "*Walden's Monthly* shall never contain a line which cannot be read, or a cut which cannot be seen in the family circle. It is the pride of the editor of this magazine that in all his journalistic career of nearly half a century, and that, too, in connection with all his writings on the sports of the period, he has never penned a line which could not be read out in the most refined family circle."

THE LIVING AGE has been the favorite magazine in thousands of American homes during the past half a century, and is to-day indispensable to all who desire to keep abreast of the times. As indicated by its name, it records all important movements in the literary world, supplying an amount of interesting and useful reading unsurpassed in quality and quantity by any other publication. Published weekly, each issue contains 64 pages, or over 3300 pages a year, forming four large octavo volumes of 824 pages each, $8.00 per annum. Boston : Littell & Co.

NOTES AND NOTICES.

THE PURIFICATION OF SEWAGE is evidently on the eve of great extension in this country, writes Colonel Waring (*Century* for April), and its success requires that the importance of making it as thorough as possible should be generally appreciated. If the work is to be done at all, it is worth while to do it well. Half-way measures, like chemical precipitation, may satisfy present legal demands, and they may in exceptional cases be advisable ; but they will not meet the require-

ments of the better-informed public opinion that is now growing up. The means for entire purification are within reach, and imperfect results will not long be accepted as sufficient.

NEGRO EDUCATION IN ALABAMA BY THE NEGROES THEMSELVES is shown in a particularly interesting way by Dr. Albert Shaw in the April number of the *Review of Reviews*. His article, entitled "Negro Progress on the Tuskegee Plan," describes the remarkable work carried on at the Tuskegee Normal and Industrial Institute under the direction of Mr. Booker T. Washington, a Hampton graduate who has chosen his field of labor in the "black belt" of Alabama. This work meets with warm commendation from Southern whites who have interested themselves in it, and is worthy of study by all Americans who look forward to a solution of the race problem through educational agencies, and especially through intelligent self-help on the part of the colored people.

ATHLETICS, if properly managed ("Yale University," by Professor Arthur T. Hadley, in *Harper's Magazine* for April), have still another moral advantage in training the students to honor a non-commercial standard of success. In these days, when the almighty dollar counts for so much, this training is of first-rate importance. Of course athletics may be so managed as to be worse than useless in this respect. The least taint of professionalism, however slight, destroys the whole good; the growth of betting endangers it. On the whole, as athletics have been managed at Yale under the constant advice of the alumni, and without either fear or favor from the faculty, they have done great good and little harm, both physically and morally. If there is danger of distorted sense of proportion among the students, it is to be remedied not by less encouragement to athletics, but by more encouragement to study.

CONGRESS OF AMERICAN PHYSICIANS, WASHINGTON, D. C., MAY 29TH–JUNE 1ST.

The following are the names of the societies constituting the Congress, and of the secretaries to whom inquiries should be addressed with regard to membership or other information :

American Ophthalmological Society, Secretary, S. B. St. John, M.D., Hartford, Conn. ; American Otological Society, Secretary, J. J. B. Vermyne, M.D., New Bedford, Mass. ; American Neurological Association, Secretary, Græme M. Hammond, M.D., 58 West Forty-sixth Street, New York City ; American Gynæcological Society, Secretary, H. C. Coe, M.D., 27 East Sixty-fourth Street, New York City ; American Dermatological Association, Secretary, Charles Warrenne Allen, M.D., 640 Madison Avenue, New York City ; American Laryngological Association, Secretary, Charles H. Knight, M.D., 20 West Thirty-first Street, New York City ; American Surgical Association, Secretary, J. R. Weist, M.D., 118 North Eighth Street, Richmond, Ind. ; American Climatological Society, Secretary, J. B. Walker, M.D., 1617 Green Street, Philadelphia, Pa. ; Association of American Physicians, Secretary, Henry Hun, M.D., 33 Elk Street, Albany, N. Y. ; American Association of Genito-Urinary Surgeons, Secretary, J. A. Fordyce, M.D., 66 Park Avenue, New York City ; American Orthopædic Association, Secretary, John Ridlon, M.D., 103 State Street, Chicago, Ill. ; American Physiological Society, Secretary, W. P. Lombard, M.D., Ann Arbor, Mich. ; Association of American Anatomists, Secretary, D. S. Lamb, M.D., 800 Tenth Street, Washington, D. C. ; American Pediatric Society, Secretary, Samuel S. Adams, M.D., 1632 K Street, Washington, D. C.

FOR HOTEL ACCOMMODATION, particular attention is invited to the advertisement of the HOTEL RICHMOND.

THE American Climatological Association will hold its eleventh annual meeting, at Washington, in connection with the American Congress of Physicians and Surgeons, May 29th, 30th, 31st and June 1st, 1894, in the parlor, Wormley's Hotel.

The general session of the Congress for Wednesday, May 30th, from 2 to 3.30 P.M., will be under the direction of this Association, and will be devoted to a discussion of "Sewer Gas." Dr. Alexander C. Abbott will present "The Chemical, Physical and Bacteriological Studies upon Air over Decomposing Substances, with Special Reference to their Application to the Air of Sewers," and Dr. Abraham Jacobi, "The

Effect of Sewer Gas in the Production of Disease." Discussion will be introduced by Drs. Victor C. Vaughn, John Guiteras, J. Solis Cohen, Beverly Robinson, Carl Seiler and others.

Many papers have been promised, and the meeting bids fair to be one of much interest.

Members desiring to present papers should send the titles as soon as possible to the president, Dr. Andrew H. Smith, 22 East Forty-second Street, New York City, in order to be in time for the preparation of the final programme.

J. B. WALKER, *Secretary*,
1617 Green Street, Philadelphia.

THE AMERICAN MEDICAL ASSOCIATION, SAN FRANCISCO, JUNE 5TH–8TH.

The Association train will leave Chicago Monday, May 28th, *via* Santa Fé R. R., Rio Grande Western, and Southern Pacific, for San Francisco *via* Denver, Colorado Springs, Leadville, Manitou, Glenwood Springs, Salt Lake, Ogden, Truckee and Sacramento. Returning, after the meeting, the train will pass through Sacramento and Northern California to Portland, thence east by way of the Northern Pacific R. R. to St. Paul, C. M. & St. P. R. R., St. Paul to Chicago. A stop over at Yellowstone National Park for those who desire it has been arranged, and it has been understood that at several places on the journey there will be short stops. President Hibberd's party in a special car join the train at Chicago, and the St. Louis party are expected to join at Kansas City. From all points east and south, concentrating on this train, should be effected at Chicago and St. Louis. For all information relating to this train, fares, etc., address J. M. Connell, 212 Clark Street, Chicago, or any agent of the Santa Fé Line in other cities. Rates promised are the lowest excursion rates at time of departure.

This is the only route on which arrangements have been perfected by the trustees.

Hotel accommodations are advertised at greatly reduced rates, and the arrangements of the local committee for enjoyment are elaborate.

THE SANITARIAN.

JUNE, 1894.

NUMBER 295.

DRINKING-WATER.

By CHARLES SMART, M.D., Surgeon U. S. Army.

A LECTURE on drinking-water was delivered by Dr. Charles Smart, U. S. Army, February 5th, under the auspices of the Sanitary League of Washington, D. C., of which the following is an abstract.—The lecturer spoke first of waters generally and their constituents, dividing the latter into inorganic matters, dead organic matter, and living organic matter. The first of these he represented as not necessarily a sanitary impurity, for the human system required and assimilated from articles of food and drink over an ounce of just such salts daily. If a water is saline to the taste, or alkaline or chalybeate, or is so hard as to curdle the soap in washing instead of forming a foaming lather, it will probably cause intestinal disorders. Otherwise the analyst has little interest in the inorganic salts, as the totality of their amount is insufficient to occasion harmful effects. The dead organic matter is of importance because it was once alive and because it is likely to be associated with that which is still alive. It is not specially dangerous in itself—in fact, it is seldom harmful unless present in quantity sufficient to give a taint or odor to the water. Nor do the living organisms ordinarily seen in the sediment of a water have much bearing on the quality of the water.

"You will observe, then, that since the saline matters and the dead organic matter are not specially unwholesome except when present in quantities appreciable to the taste, and since most of the living organisms present in a water have little influence on its quality, the question of wholesomeness becomes reduced to a determination of the presence or ab-

sence of certain organisms which we know to be the germs of disease and to be sometimes contained in water supplies. These are the germs of malarial and typhoid fevers and of cholera. It is to the microscopist and bacteriologist that we would naturally look for the detection of these, but bacteriology is yet in its infancy—a lusty infant, it is true, and giving promise of a phenomenal manhood. There may be in the distributing reservoir of a large city enough of the germs of typhoid-fever to cause sickness and sorrow in many a household in the course of a year, but what chance has the microscopist of discovering them in the part of a drop which covers the field of his microscope? There may be several specimens of four-leaved clover in the meadows, but what are our chances of finding one in a handful plucked at random?

"Extravagant ideas of the powers of scientific investigators are sometimes published. Not long ago I saw it asserted that a cholera germ had no more chance of passing along the current of the Potomac undetected by the bacteriologist, than a mad dog had of careering along Pennsylvania Avenue at midday without being discovered. Indeed, it is because of the inability, so far, of the bacteriologist to detect the germs, that an appeal for information is made to the sanitary chemist. The chemist examines the dead organic matter in the water. Malarial infection is a product of a soil in which the decay of vegetable organic matter is in progress. Waters draining from such a soil carry with them the malarial infection, and also more or less of the decaying organic matter. The presence of the latter, discovered by the chemist, suggests the likelihood of the concurrent presence of the former. When the germs of typhoid-fever or of cholera are present in a water, they generally enter the water along with sewage, for it is known that these pathogenic or disease-breeding organisms are cast out of the sick person by way of the intestinal canal. Hence, when the presence of animal matter or sewage is detected by the chemist, the likelihood of the concurrent presence of the bacillus of typhoid-fever is suggested. Chemistry makes no pretense of discovering the germs of disease, but merely suggests the likelihood of their presence—the presence of malaria in association with vegetable matter; the presence of the bacillus of typhoid in association with animal matter."

The lecturer then divided waters for his sanitary inquiry into: Rain or cistern waters, surface waters, subsoil or ground waters and deep or subterranean waters. The first he showed to be pure and wholesome when ordinary care is taken in their collection and storage. The second, or surface waters, are pure or impure according to the nature and condition of the shedding surface. He instanced the Rio Grande as a malarious surface water, and the cause of the malarial-fevers which rendered Fort Brown, Tex., the most insalubrious of the United States military posts until a new and pure water supply was provided, when with the discontinuance of the river water the post became as healthy as an Atlantic summer resort. The epidemic at Plymouth, Pa., in 1885 was brought forward as an illustration of typhoid-fever propagated by surface waters.

"Local outbreaks of typhoid-fever have been traced so frequently to the use of the water of shallow wells that the health officers of most of our municipalities have interdicted their use. But on the other hand, if the soil is fresh and unpolluted by the filth that is unavoidably associated with a long-continued occupancy a free supply of soft wholesome water may be obtained. Brooklyn, L. I., is supplied in part by sub-soil water piped from a clean filtering area at some distance from the city. At isolated country houses the dangerous character of the shallow well arises from the proximity of cesspools, pits, garbage heaps, and manured ground; and not unfrequently the handsome trees that throw a grateful shade over the cool waters of the well form channels of entry for unfiltered seepage along the course of their roots. The distinguished bacteriologist, Professor Koch, attributes any unwholesomeness of such wells to unfiltered inflow from the surface, but whether the contamination is from unfiltered inflow or from the inefficiency of the subsoil as a filter, the facts remain that such waters are found by the chemist to contain much organic matter, vegetable and animal, and by medical observers to be associated with the propagation of both malarial and typhoid fevers.

"The deep or subterranean waters are those that falling on high ground sink into broken edges of some porous stratum which underlies the clay beds of the bottom lands. The

waters percolate through and along the porous stratum underneath the impermeable clay which supports the subsoil water. When tapped by digging or boring they are the waters of our deep wells, originally pure, but often valueless for domestic or manufacturing purposes on account of the large amount of mineral salts which they have dissolved in their subterranean course. If the pervious layer be one of sand and gravel the water may be as pure as distilled water. The discovery of such water 350 feet below the surface of the city of Memphis, Tenn., solved the water question for that city at a time when its citizens were debating whether the million dollars which they could raise for a water supply should be expended in bringing in the clay-laden waters of Wolffe River or the sewage-polluted waters of the Mississippi. The thorough filtration to which this deep-lying water is subjected in its subterranean course freed it from all germs, whether of malaria or of typhoid."

The simplest single experiment employed by the chemist is the charring or burning of the residue after evaporation. If there is merely a slight darkening without fumes or odor the water is free from organic matter. If there is much blackening which is dissipated with difficulty and with the evolution of peaty or pyroligneous odors the matter is vegetable. If there is a strong nitrogeneous odor and the carbonaceous blackening disappears with incandescent sparkles and nitrous fumes the matter is animal. This is but a rude and primitive experiment, but it gives valuable information in the absence of facilities for more elaborate methods. The organic purity of a pure water may be demonstrated by it, as well as the impurity of a notably bad water.

Purification by sedimentation was then discussed, as it is by this process that the Potomac River supply of Washington is supposed to be treated. The inefficiency of the local arrangements was pointed out and the high death-rate of the city from typhoid-fever was attributed to this inefficiency. "The greater the care taken in the purification of a city's water supply the less is the death-rate of that city from malarial and typhoid fevers. Brooklyn has an annual death-rate from typhoid-fever of 15 in every 100,000 of its population; New York, 26; London, 28; Baltimore, 40; Boston, 45;

Cincinnati, 63 ; Philadelphia, 66 ; Chicago, 69 ; and Washington, according to Dr. Billings's recent census work, 75. We do not have this high rate because our sewerage system is defective, for Baltimore has no sewerage system, nor because our houses are overcrowded and unventilated, back yards filthy and undrained and streets narrow and unclean. No. We have it because the germs of the disease are distributed along with the clay particles of the Potomac water. The inflow of the sewage into the Potomac River above the Great Falls is small, but there is enough of it to give us more typhoid-fever than is found in Baltimore, New Orleans, and other cities that lack many of our sanitary advantages."

The Army engineers in charge of the water supply are aware of the defects in the system, and have excellent plans for remedying them ; but money is required to carry them to completion. Dr. Smart closed by urging the expenditure.

"Think of the 75 deaths from typhoid-fever annually in every 100,000 of the population, 60 deaths more than in the city of Brooklyn, and more than we would have in this city if our water was as pure as that of Brooklyn. Putting our population at a quarter of a million, we have 150 unnecessary deaths every year. Ah ! but the cases ! To find the number of cases we must multiply the deaths by twenty ! Three thousand cases of serious sickness, each lasting from two to six weeks. Three thousand cases of disease that might be prevented by the expenditure of a little money. Think of the suffering, anxiety, and sorrow involved in the history of these three thousand cases, and then say whether an appropriation having in view the purification of the city water supply is a good investment or a bad one."

FLIES AND THE TRANSMISSION OF DISEASE GERMS.—During the epidemic of cholera at Hamburg, Dr. N. Simmonds examined flies captured in the *post-mortem* room at the time the bodies were open. In these flies numerous *comma bacilli* were found. When the *post-mortems* were concluded and the room washed, no cholera bacilli could be found. An attempt was made to find how long the cholera germs were retained by the flies, and it was ascertained that they disappeared in one hour and a half.

RECENT PROGRESS IN PUBLIC HYGIENE AND PREVENTIVE MEDICINE.

By SAMUEL W. ABBOTT, M.D., Secretary of the State Board of Health of Massachusetts.

INFECTIOUS DISEASES AND THEIR PREVENTION.

Diphtheria.—Dr. Thorne Thorne, Chief Medical Officer of the Local Government Board of England, in a recent lecture upon diphtheria, said :

" Bad sanitary conditions might have an influence, but they are overwhelmed by other conditions which cause the disease. . . . Diphtheria chiefly attacks children of school age, from five to fifteen, and it is clearly proved that the disease is influenced by school attendance. Dr. Power has shown conclusively that, by an aggregation of children at school, you can deliberately manufacture a potency of diphtheria. The reasons for this are chiefly the special infection from the breath of those who are congregated together for any length of time, and the limited space set apart for the scholars. There is also the danger, at young ages, of children passing confectionery from mouth to mouth, of drinking from the same unwashed cups, the absence of ventilation, and other conditions."

He laid special stress upon infection through the medium of milk, and advised every one to leave off drinking raw milk. He also named the lower animals, and especially the domestic cat, as carriers of infection.

Isolation was recommended as absolutely essential. In hospitals there should be much more attention to the amount of *lineal* space per bed, which he deemed of more importance than cubic air-space or high rooms. No child should go to school from a house where there is a sore throat. The system of keeping up "average attendance" by insisting that all scholars should go to school had done much harm. Everything that touched the mouth or lips of a patient should be burned. Houses should be selected which are not damp, and dense foliage should not grow near them.

THE DISSEMINATION OF SMALL-POX BY TRAMPS.

Special prominence has been given to this subject by the medical officers of health of England during the past year; and valuable papers have been published by Dr. Armstrong, of Newcastle-on-Tyne, and others. Dr. Armstrong says: "Of 63 towns invaded in 1892–93, the medical officers of health of which have given me the particulars, 37, or 59 per cent, had the infection primarily from vagrants. The disease was brought secondarily by vagrants into 36 towns, including some into which first cases had also been brought by the same class of persons. Such secondary infections occurred as often as nine times in Carlisle, Southampton, and Sunderland, twelve times in Warrington, fifteen times in Keighley, eighteen times in Blackburn, and no less than twenty-five times in Nottingham. In nineteen times only out of the 63 towns reporting was small-pox infection stated to have been brought otherwise than by vagrants; and in seven of these it was subsequently reintroduced by vagrants no less than twenty-five times." As a result of his inquiries Dr. Armstrong presented the following resolutions:

That the Incorporated Society of Medical Officers of Health consider it desirable:

1. That vagrants should be restrained in their powers of carrying infection about the country, especially in epidemic times.
2. That they should be made to report their movements.
3. That they should, when considered requisite, be subject to disinfection and detention for such time as the sanitary authority of the district in which they are may think necessary for the protection of the public health.
4. That in epidemic times all persons frequenting casual wards or common lodging-houses should be medically examined on admission.
5. That sanitary authorities and the police should have power to detain for medical examination any vagrant found in any public place.

MILK INFECTION.

Professor W. T. Sedgwick has contributed valuable papers upon different phases of this subject to the *Boston Medical and Surgical Journal* and to the Twenty-fourth Report of the State Board of Health of Massachusetts. Other investiga-

tions confirm the conclusions presented in these papers, first, as to the presence of bacteria in large numbers in milk as drawn from the cow, and, second, as to the question of milk as a medium for the transmission of the infection of typhoid-fever.

König,* in his recent volume, says: "Cow's milk, although it may leave the udder free from bacteria, will be found to contain them immediately after milking. These bacteria enter the milk by means of hair, and particles of dirt floating in the air of the stable, and increase with extraordinary rapidity.

Cropf and Escherich† found in milk, two or three hours after milking, by means of Koch's method of cultivation, from 60 to 10,000 colonies, and in five to six hours after milking 200,000 to 6,000,000 colonies per cubic centimetre.

E. von Freudenreich‡ demonstrated the rapid development of bacteria in milk as follows; at different temperatures:

NUMBER OF COLONIES OF BACTERIA PER CUBIC CENTIMETRE.

	15° C. (60° F.)	25° C. (77° F.)	35° C. (95° F.)
3 hours after milking..	10,000	18,000	39,000
6 hours after milking..	25,000	172,000	12,000,000
9 hours after milking..	46,500	1,000,000	35,280,000
24 hours after milking..	5,700,000	577,000,000	50,000,000

Miquel§ also testifies to the rapid development of bacteria in milk, and to the fact that the rapidity of development depends upon the temperature of the milk. Although the bacteria may be harmless, their presence must be borne in mind, especially in the use of cows' milk as food for infants. In addition to the harmless bacteria, those which are pathogenic may also gain access to the milk, and thus cause disease.

In Luzerne, Switzerland,‖ several epidemics of typhoid-fever have been traced to buttermilk, which was returned from

* "Chemie der Menschlichen Nahrungs und Genussmittel." Third edition, 1893.

† *Chem. Centralblatt*, Bd. ii., pp. 583, 584.

‡ *Kleine Milchzeitung*, 1890, No. 2.

§ *Chem. Centralblatt*, 1890, i., p. 1064.

‖ *Milchzeitung*, 1890, p. 296.

the creameries to milk-dealers after the cream had been removed for making butter.

A similar typhoid epidemic* is detailed in the Danish *Wochenschrift für Aerzte*, which occurred in the fall of 1886 in the three districts of Ore, Haarsley, and Skowby, in the island of Fünen. The cause was traced to a common establishment belonging to these three parishes, from which buttermilk was resold to customers. Typhoid-fever was found to exist at this establishment, and the sick patients had partaken of the returned buttermilk.

Another epidemic traced to buttermilk is reported from two districts in Hanover.†

In Groningen, Holland,‡ another typhoid epidemic was reported in 1886, the cause of which happened to be the infection, in the dairies, of vessels washed with water which had been polluted by the excreta of typhoid-fever patients.

Almquist§ reports an epidemic of the same disease which occurred near Göteborg, Sweden, in 1889, in which the cause was determined to be the infection of skim-milk which had been returned from a dairy to the consumers.

Kitasato‖ reports cases of cholera which were caused by the use of infected milk in Calcutta. The investigations of Koch and Kitasato show that cholera bacteria will multiply in milk. Their length of life depends on the reaction of the milk. The sooner it sours the sooner they die.

THE HYGIENE OF OCCUPATIONS.

The well-known observations of Dr. Farr upon the mortality of persons engaged in certain occupations, as deduced from the Registration Reports of England, have been supplemented by valuable papers on the same subject by his successor, Dr. Ogle.

The following is selected from several tables presented by Dr. Ogle at the last session of the International Congress of Hygiene at London.

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* *Milchzeitung*, 1886; p. 834. † *Ibid.*, 1890, p. 245. ‡ *Ibid.*, 1886, p. 875.
§ *Zeitschrift für Hygiene*, 1890, 8, 137.
‖ *Ibid.*, 1889, 8, 491.

COMPARATIVE MORTALITY FROM PHTHISIS AND RESPIRATORY DISEASES, OF MEN FROM TWENTY-FIVE TO SIXTY-FIVE YEARS OF AGE, ENGAGED IN VARIOUS DUST-INHALING OCCUPATIONS.

	Phthisis.	Lung Diseases.	Total.
Fishermen (as standard)	55	45	100
Carpenters, joiners	103	65	170
Bakers	107	94	201
Wool-workers	130	104	234
Cotton-workers	137	137	274
Cutlers, scissor-makers	187	196	383
File-makers	219	177	396
Masons, brick-layers	127	102	229
Stone and slate-quarry men	156	138	294
Pottery-makers	239	326	565
Cornish miners	348	231	579
Coal miners	64	102	166

The point most worthy of note in the foregoing table is the remarkable immunity of coal miners from phthisis, as compared with the high mortality of the metal miners of Cornwall.

ON THE QUALITY OF THE BERLIN SERVICE-WATER.*

Dr. Proskauer furnishes additional facts upon the effect of filtration of water through sand, as investigated by Piefke and Fränkel.

The volume of water furnished to Berlin is daily on the increase, and this increase is not due alone to the growth of population, but also to a larger consumption per head. Respecting the composition of the unfiltered water of the Spree and of Lake Tegel, which furnish the city water-supply, the author points out that the experiments carried out during the last few years, with reference to the power of the sand-filters to arrest micro-organisms, have shown that it is imperative that the source of water should be, as far as possible, protected from pollution by human excreta, so as to furnish a raw material of the utmost degree of purity.

In this respect, the water of Lake Tegel is greatly preferable to that of the river as drawn at the Stralau works. The river water is, as a rule, strongly yellow in color, almost always turbid, and has a muddy taste and smell. When allowed to

* *Zeitschrift für Hygiene*, vol. xiv., 1893, p. 250.

stand it has at times a considerable deposit, consisting mainly of organic detritus and bacteria. The water of the lake is, as a rule, clear, but occasionally slightly turbid ; in color it is pale yellow, and the taste and smell rarely dead and earthy. This, in fact, occurs only when the snow melts in the spring, and there is at certain periods a slight deposit. The bacteriological examinations showed that the river water was usually very rich in germs, and that the number is on the increase. Out of sixty analyses in the period of two and a half years, the number of colonies of bacteria in one cubic centimetre of water was,

In 16 cases or 26.6% of the tests over..... 100,000
In 23 cases or 38.3% of the tests between 10,000 and 100,000
In 20 cases or 33.3% of the tests between 1,000 and 10,000
Only one sample contained less than 1,000 germs.

Contrasting the totals per cubic centimetre in the present period with those in former years, it appears that in

1884–85 there were from.... 59 to 8,316 germs.
1885–86 there were from.... 191 to 110,740 germs.
1886–87 there were from.... 750 to 17,000 germs.
1887–88 there were from....1,400 to 186,000 germs.
1888–89 there were from.... 220 to 190,000 germs.
1889–91 there were from.... 940 to 360,000 germs.

The author believes that the water of the Spree is becoming so polluted that its use must either be shortly discontinued on sanitary grounds, or the filtration must only be permitted to be carried out under the most stringent precautions.

There were only three occasions, however, when the number of germs per cubic centimetre in the water of the Tegel exceeded one thousand.

With reference to the filtered water, the author says the number of bacteria capable of development after filtration were as follows :

During 1889-90 from.....12 to 110 per cubic centimetre.
During 1890–91 from..... 9 to 310 per cubic centimetre.
During 1891 (last half).... 3 to 60 per cubic centimetre.

Only three times during the whole period did the number of germs in the filtered Tegel water rise above 100 per cubic centimetre.

On twenty-three occasions the filtered water of the Spree contained more than 150 germs, the numbers ranging from 310 to 13,000 per cubic centimetre. In certain cases these high ratios of germs were attributed to the freezing over of the filter-beds. The beds at the Tegel works are covered in and cannot become frozen in winter.

After reviewing the chemical and bacteriological analyses of the water, the author points out that only the latter tests furnish an accurate and liable indication of the working of the filter-beds. The quality of the service-water was tested in the mains at various parts of Berlin, and copious tables are given of the analyses of the water, made at stated intervals during the whole period.

LEAD-POISONING FROM A PUBLIC WATER-SUPPLY.

Several cases of poisoning in the town of Calau* induced the government to make an inquiry as to the cause. The water was of extreme purity, as indicated by chemical analysis, and contained only five germs per cubic centimetre. It was brought to the town in cast-iron pipes coated with asphalt composition, but the houses were supplied by means of lead pipes of considerable length. Two months after the water was introduced there some cases of lead poisoning were reported among inhabitants where the water remained undisturbed in the pipes during the night. An inquiry conducted under the direction of Dr. Koch revealed the presence of lead, varying in amount from a mere trace to thirteen milligrammes per litre.

The reason for this rapid absorption of the lead was shown to be the richness of the water in free and partially combined carbonic acid, the low percentage of carbonates, and its extreme softness. The tendency to dissolve lead was further increased by the large volume of air contained in the water, which was taken up during its flow through the mains, for at the source it contained no air whatever.

THE WATER-SUPPLY OF PARIS.

The new water-supply of Paris,† now being introduced, will yield a supplementary supply of 25,000,000 gallons per day,

* *Zeitschrift für Hygiene*, vol. xiv., 1893, p. 295.

† *Le Genie Civil*, vol. xxii., 1891, p. 181.

at a cost of about $7,000,000. The sources are two streams, the Breuil and the Vigne, whence it is to be brought to the reservoirs at Montrebon, a distance of about 68 miles, of which 38½ miles are open cutting, 18½ miles are underground conduits, 3 miles elevated conduit, and 4½ miles are siphons. The diameter of the open cutting varies from 5 feet 10 inches to 6 feet 2 inches. The reservoirs are designed for a capacity of 10,600,000 cubic feet, and are divided into three compartments.

A NEW DISINFECTING APPARATUS.

This apparatus was designed by Mr. O. Krell and Dr. Raptschefsky, at the direction of the inspector of the medical department of the Russian Army. In the first instance all existing forms of apparatus were procured, and were submitted to a searching trial. The conditions laid down for the new apparatus were:

1. That it should destroy entirely, not only the germs of all known pathogenic organisms, but even those bacilli found to be the most difficult of extermination (the garden-mould bacillus).

2. That the disinfection should be accomplished in the shortest space of time.

3. That the apparatus should be as simple as possible, both in construction and in manipulation.

The various systems tested were: (1) hot air; (2) superheated steam; (3) saturated steam jets; (4) saturated steam at rest, with means for creating high pressure during disinfection; (5) saturated steam at rest at about atmospheric pressure, with means for producing a vacuum by condensation; (6) saturated steam jets at high pressure, with superheating.

The operations of these various classes of disinfecting apparatus were discussed in detail; and the experiments led to the conclusion that the new apparatus must work by means of saturated steam at a high pressure, with provision for the ventilation of the disinfecting chamber, and with special air-inlets also at the floor level, without special heating apparatus within the chamber, but furnished with heat-accumulators. The apparatus is made of steel, is cylindrical in form (3 feet in diameter and 5 feet long). The cylinder is placed horizon-

tally, and has doors at each end, fastened to bronze rings with six screw-bolts to each. The chamber is tested to a pressure of ten atmospheres at the works, but the safety-valve is weighted to lift at three-quarters atmosphere above normal.

The total weight of the apparatus is about one ton. It is distinguished from all others by its rapidity of working. The previous heating up of the chamber from the cold state takes two minutes; and in fifteen minutes more a temperature of 100° C. (212° F.) is reached, even through a thickness of thirty-two blankets, while in five minutes more the temperature rises to 112° C. (234° F.). The disinfection, therefore, even of the most difficult objects, can be completed in twenty-two minutes. The working speed is contrasted by the author with that of other forms of apparatus now in use, and the advantage of saturated steam at 100° C. over heated air, even at 150° C., as determined by Koch,* is insisted upon.

RECENT APPARATUS FOR CREMATION.

Dr. T. Weyl,† of Berlin, gives a brief historical account of the practice in all past ages (introduced by the Aryan race), and traces the revival of the practice to the close of the eighteenth century, although from that time till the first cremation in Europe at Milan, January 27th, 1876, a period of nearly eighty years elapsed. Since that date the practice has extended in Italy, till there are now 27 crematories in operation in that country alone.

In Germany, the first crematory was built at Gotha in 1878. No others were introduced till that at Hamburg in 1891, but very soon after others were erected in Heidelberg, Berlin, and Offenbach. The number of cremations at Paris reaches a total of 400 annually, and the system is in use to some extent in Switzerland, Denmark, Sweden, and the United States. The author classifies the existing establishments under two heads, those without regenerative furnaces and those which adopt this plan. To the former class belong the crematories of Milan, on the system of Gorini, and that of Venini, which is a modification of the former. In the latter class are included the crematory at Gotha, in which, during the period

* *Gesundheits Ingenieur*, August 31, 1892, p. 521.

† *Ibid.*, 1892, p. 377.

ending November, 1891, no less than 976 bodies had been disposed of. The process here lasts two hours and a half, and the cost is about eighty marks ($18.50). The system of Bourry at Zurich, the furnace of Toiseul and Fradet at Père-la-Chaise, in Paris, and others at Stockholm and Gothenburg are founded on the regenerative furnace of Siemens. The furnace of Guichard differs from those mentioned by the use of coal-gas and compressed air; it has, therefore, no gas-producer furnace. In an experimental trial of this furnace at Paris, the process lasted forty-six minutes, and involved the use of 190 cubic metres (about 6700 cubic feet) of gas and 500 cubic metres of compressed air. A table is appended, giving the cost of cremation with each system, together with the time employed in the antecedent heating, and also in the cremation itself.

INFECTIOUS DISEASES.—PERIODS OF INCUBATION, QUARANTINE AND INFECTION, AND SOURCES OF INFECTION.

The following summary is condensed from Dr. L. F. Parkes's recent "Handbook of Infectious Diseases," and will be found very useful to boards of health and sanitary officials for reference, as well as to general practitioners of medicine.

DIPHTHERIA.

Incubation Period: least, unknown; average, 2 days; greatest, 7 days.

Quarantine Period: 7 days from last exposure to infection.

Infective Period: from the beginning of symptoms, for the whole period of illness.

Sources of Infection: 1. From a previous case, acute or convalescent. 2. From a case of apparently simple tonsilitis. 3. From a case of apparently simple nasal ulceration or ozæna. 4. From domestic animals (cats, pigeons, or fowls) suffering from a throat affection of a diphtherial nature. 5. From cows' milk, by human infection of the milk in the cow-sheds and dairies, etc. 6. From fomites—that is, infected bedding, clothes, carpets, curtains, books, toys, cups, spoons, forks, etc. 7. From a person who has been in contact with a diphtheria patient, but who has not himself contracted the disease. 8. From defective sanitary conditions; these are probably merely predisposing causes engendering morbid conditions of the tonsils favorable to the growth of diphtheria contagion when implanted thereon.

SCARLET-FEVER.

Incubation Period: less than 24 hours; average, 1 to 3 days; greatest, 7 days.

Quarantine Period: 7 days from last exposure.

Infective Period: from earliest appearance of symptoms till all desquamation has ceased.

Sources of Infection: 1. From a previous case of scarlet-fever, acute or convalescent. 2. From a case of sore throat without discernible rash, but merely a mild form of the disease. 3. From cows' milk, either by human infection of the milk in cow-sheds and dairies, or during the milking, or from a diseased condition of the cows. 4. From fomites. Infection may be carried by persons who are not themselves sufferers, if they have been in contact with patients.

MEASLES.

Incubation Period: from exposure to infection to onset of illness: least, 4 days; average, 9 to 10 days; greatest, 14 days. From exposure to infection to appearance of rash: least, 7 days; average, 14 days; greatest, 18 days.

Quarantine Period: 15 days from last exposure to infection.

Infective Period: from earliest appearance of symptoms till convalescence is well established. The catarrhal stage preceding the eruption is very infectious.

Sources of Infection: 1. From a previous case of measles. 2. From fomites.

MUMPS.

Incubation Period: least, 14 days; average, 21 days; greatest, 25 days.

Quarantine Period: 25 days from last exposure to infection.

Infective Period: from onset of prodromal stage for 2 or 3 weeks subsequent to appearance of parotitis. The chance of infection diminishes progressively from the onset of the disease.

Sources of Infection: 1. From a previous case. 2. From fomites.

GERMAN MEASLES.

Incubation Period: least, 5 days; average, 18 days; greatest, 21 days.

Quarantine Period: 21 days from last exposure to infection.

Infective Period: from onset of prodromal stage to cessation of desquamation.

Sources of Infection: 1. From a previous case. 2. From fomites.

INFLUENZA.

Incubation Period: less than 24 hours; average, 3 to 4 days; greatest, 5 days.

Quarantine Period: 5 days from last exposure to infection.

Infective Period: from earliest onset of symptoms till convalescence is well established.

Sources of infection: 1. From a previous case of influenza. 2. From fomites.

WHOOPING-COUGH.

Incubation Period: least, 7 days; average, not determined; greatest, 21 days.

Quarantine Period: 21 days from last exposure to infection.

Infective Period: the whole period of illness from onset of earliest catarrhal symptoms.

Sources of Infection: 1. From a previous case of whooping-cough. 2. From fomites.

SMALL-POX.

Incubation Period: least, 9 days; average, 12 days; greatest, 15 days.

Quarantine Period: 15 days from last exposure to infection.

Infective Period: from the onset of initial symptoms till all scabs have been removed. The period of greatest infectivity is during the acute stage (vesicular and pustular). During the initial illness and until the appearance of the rash the liability to impart infection is not great.

Sources of Infection: 1. From a previous case of small-pox. 2. From fomites. Infection can be carried by a person who has been in contact with a small-pox patient, but who is not himself a sufferer from the disease. 3. Proximity to a small-pox hospital containing numerous cases in the acute stage.

CHICKEN-POX.

Incubation Period: least, 13 days; average, 14 days; greatest, 19 days.

Quarantine Period: 19 days from last exposure to infection.

Infective Period: from appearance of eruption till this has completely disappeared.

Sources of Infection: 1. From a previous case. 2. Fomites. The infection may be carried by those who have been in contact with the disease.

TYPHOID-FEVER.

Incubation Period: least, 8 days; average, 12 to 14 days; greatest, 23 days.

Quarantine Period : 23 days from last exposure to infection.

Infective Period : the excreta are infectious through the whole course of the disease, and until convalescence has been established at least a fortnight.

Sources of Infection : 1. Water, food, or air contaminated by the specific virus contained in the excretions of a typhoid-fever patient. 2. Fomites. Infection may persist for several weeks in infected clothing and bedding shielded from exposure to light and air.

TYPHUS-FEVER.

Incubation Period : average, 7 days.

Quarantine Period : 14 days from last exposure to infection.

Infective Period : from beginning of illness till convalescence.

Source of Infection : From a previous case of the disease. Fresh air and free ventilation rapidly destroy the virulence of the contagion. Fomites probably do not propagate the contagion.

ASIATIC CHOLERA.

Incubation Period : least, a few hours ; average, 1 to 2 days ; greatest, 10 days.

Quarantine Period : 10 days from date of last exposure to infection.

Infective Period : from earliest onset of symptoms till complete recovery.

Sources of Infection : 1. From water, food, and air contaminated with the discharge of a person suffering from cholera. 2. From fomites. 3. There is reason to believe that the virus contained in the excreta at the time of leaving the body of a patient and for a short period afterward, is in a less active condition and more easily destroyed by chemical agents than after such excreta have been exposed for a short time to contact with the air.—*Boston Medical and Surgical Journal.*

LEPROSY AND VACCINATION—A LETTER FROM CALCUTTA, INDIA.

To the Editor of the Medical Record :

SIR : *Audi alteram partem* is a seldom practised adage when the mother country deals with the Western Atlantic tracts, and everything American is dubbed "That's Yankee, you know," and more or less pitched aside.

On page 708 of your December 2d issue, Dr. Beaven Rake says that I published a long series of cases (of leprosy) in which the data are too scanty to prove their connection with vaccination. I did nothing of the sort, and the facts are: Mr. W. Tebb published a pamphlet ("Public Health") wherein he made certain statements that I took exception to, and replied to in pamphlet form in 1891. This opened up a correspondence which resulted in my sending Mr. Tebb full medical histories of several lepers who were at that time under the observation of a fully competent committee of qualified medical men. From these histories Mr. Tebb (not I) published extracts which he embodied in pages 191-99 of his "Recrudescence of Leprosy," which it is apparent Dr. Rake did not peruse carefully, else he would not have drawn the conclusions he now publishes in your columns.

When Dr. Rake was taken to task for the neglect displayed by the Leprosy Commissioners, he replied that he never heard of Dr. Chew's cases or he would have impartially (?) considered them (*British Medical Journal*, April, 1892); but he forgot to add "Mr. Wilson of the I. D. N. and the editor of the *Mohammedan Observer* repeatedly called my attention to those very cases, but I ignored them" (*vide Indian Daily News*, June 11th, 1891).

Now, sir, I am not ashamed of being a "Yankee," but knowing from experience the bitter criticisms I would be subjected to, I made a point of thoroughly mastering Hindustani, and as I did not, like Dr. Rake, have to depend on "dubious" interpretation, I was in a position to glean more definite information than he could. Before I attempted to write *causa morborum* against any patient I spent four or five hours in cross-examining each of my patients, even to the third and fourth generation of their antecedents, and demanding proofs of the statements made me. Consequently the conclusions arrived at by me are not so faulty as Dr. Rake, who knows practically nothing of India, pretends they are. (I have been out here for twenty-seven years.)

Dr. Rake repudiates vaccination as a factor in leprosy, but at the same time quotes instances where leprous infiltration has been proven to be consequent on vaccination. He ought also to remember that as termites change their form in ac-

cordance with the nutriment they receive, even though they are the offspring of the same parent, so, also, do the *bacilli lepra* manifest differences in size, thickness, and activity, in compliance with the conditions of their surroundings.

The endemic theory does not hold when brought to bear on my cases, as not a single one of those that Dr. Rake holds up to ridicule belongs to a district where lepra is endemic; and, as a matter of fact, the majority of them were vaccinated when they came to Calcutta, and it was only on their return to their several districts (where the maps published by the Leprosy Commissioners show the least indications of lepra) that the disease manifested itself.

Lastly, as to the census returns for India, I am in a position to point out in Calcutta alone no less than fifty genuine lepers who were not included in that enumeration, and while Mr. J. A. Baines shows 127,056 lepers in the whole of India, and submits that only 173 of these were in Calcutta, the *Medical Reporter* of September 1st, 1892, points out that at that very time there were, in and about Calcutta, the small number of 2518 lepers; and Mr. H. F. T. Maguire, the Census Commissioner, complains in Sections 125 and 128 of his 1891 Report: "I do not pretend that the census for 1891 is a perfectly accurate one. Considering the difficulties in the way, and the men with whom I had to work, it has sometimes been a matter of surprise that any census was taken at all, or any returns prepared that could be accepted [mind! not proven] as accurate." I therefore fail to see the grounds for Dr. Rake's deduction, "There is thus an absolute 'decrease' of 4604" (page 710 of your issue).

In conclusion, I trust you will do me the justice of publishing this letter, and thus disabuse the public mind of errors that are calculated to do much harm to the world at large if they be allowed to pass unchallenged.

I am, sir, yours truly,

ROGER S. CHEW, M.D., M.S.C.,
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—*Medical Record, March 31st*, 1894.

NEEDFUL PRECAUTIONS AGAINST THE SPREAD OF COMMUNICABLE DISEASES BY TRAVEL.*

By G. P. CONN, M.D., Concord, N. H., Surgeon C. & M. and B. & M. R.R.

THAT railroads and steamships, in their capacity of common carriers, may and do become disseminators of infectious and contagious diseases may be assumed without any fear of the assertion being controverted. It is a well-known fact that small-pox rode into Montreal in 1885 amid all the luxurious appointments of our justly celebrated Pullman service; that yellow-fever came into Grenada and Memphis as well as other towns in 1878 riding in all kinds of coaches; that steamship lines every year bring to our shores more or less persons who are suffering from typhus-fever or other contagious diseases, and that experience has proven that all forms of transportation may and do become the avenues by which disease finds its way from place to place. It is an equally safe assertion that there is no one connected with the management of our railroads but will disclaim any intention of their lines being used to spread disease, and at the same time they would gladly welcome any reliable information that would enable their lines to formulate rules and regulations that would overcome the difficulties now surrounding the problem of sanitation as applied to railway transportation.

The public, since the epidemic of yellow-fever in 1878 and 1879, has become critical and easily alarmed upon questions bearing directly or indirectly upon the health of individuals, families or communities, and therefore State boards of health as well as municipal health officers oftentimes feel called upon to exercise authority at different points, much to the discomfiture of the management and patrons of great through lines of travel. If we had a central or national board of health that could act in conjunction with the Inter-State Commerce

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* Read at the third annual meeting of the New York State Association of Railway Surgeons, held in the Academy of Medicine, New York, November 15th, 1893.—*From the Railway Age, May 4th*, 1894.

Commission, it is possible something might be done to give to the public and the management of roads some uniform method by which all might be governed ; but as we have nothing of the kind, it is quite necessary that associations like this and our National Association of Railway Surgeons should discuss the subject, for we may at any time, in our association with railways and their management, be brought face to face with an epidemic travelling across our country with the devastating power of a cyclone.

To show that I am not the only one who holds this belief, I will instance the following : So long ago as 1884 W. Thornton Parker, M.D., Surgeon U. S. Army, then stationed in New Mexico, in a paper read before the American Public Health Association, entered an emphatic protest against allowing people ill with contagious and infectious disease to occupy cars in which the public were expected to travel. To quote from his paper, he said :

" Not only are the ordinary cars thus constantly contaminated, but the more luxurious and expensive sleeping-cars are very much used for cases suffering with whooping-cough, scarlatina, and other diseases. Patients convalescing from contagious diseases are very commonly met with. I understand that quite recently a very prominent and educated lady travelled from San Francisco to Boston and even beyond with children sick with whooping-cough. In this case a private compartment was used, but of course the danger of infecting other children was only lessened, not removed. Several cases of that most dreaded of all diseases of children, scarlet-fever, have to my knowledge been communicated in this way. A healthy child occupies the same seat where a convalescing scarlet-fever patient has been sitting and falls a victim to this terrible disease. Such license is an outrage on the travelling public, and should not be tolerated another day."

Such was the language of an acute observer nearly ten years since, and while State and local boards of health have made great advancement in most matters connected with sanitation, the condition remains the same in our railway cars. I am not certain but the conditions are worse, for I believe that with the opening of new avenues for travel, far more people are passing over our roads in the pursuit of health than was

thought possible ten years since. At that time Dr. Parker suggested that railway station officials, conductors, and others connected with the train department, be required to prohibit persons suffering from contagious diseases from occupying cars used by the general travelling public, surely a commendable suggestion, but I fear impracticable, as these men could not be expected to diagnose disease. He added that a hospital sleeper could be furnished on through lines and a medical inspector for large stations, like those of New York, Chicago, St. Louis, and other large places, and said these inspectors should have the legal authority to force patients suffering from contagious diseases, or convalescing from infectious disorders, into these special cars. To-day this would not be considered practical, for those suffering from small-pox and diphtheria, scarlet-fever, or measles would not be considered fit subjects to be placed in the same car.

As another instance, allow me to quote from Medical Director Albert L. Gihon, U. S. Navy. In the course of his address to the section, "Hygiene, Climatology, and Demography," of the Pan-American Medical Congress, on the occasion of its recent meeting in Washington, Dr. Gihon used the following impressive language:

"The consumptive, whose traits no professional acumen is required to recognize, frequents crowded thoroughfares, sits beside us in unventilated street cars and at the hotel table, occupies Pullman sleeping berths, and shares the steamship stateroom, wholly unrestrained and innocently ignorant that he or she may be sowing the seeds of disease among delicate women and children. Any one may verify this who uses his eyes for the purpose along the railway and coastwise steamer routes to our invalid resorts. Within a twelvemonth, on my way to Mexico by rail, I was fellow-passenger with two invalids in the advanced stage of phthisis, *en route* for San Antonio, one of whom occupied the opposite berth and the other diagonally across the car, so that I could see and hear them coughing and expectorating with only such attention as well-intending but unskilled relatives could render. They had no vessels for receiving their sputa, which was discharged in their pocket-handkerchiefs, to be scattered over pillows, coverlets, and blankets. They left the car in the morning, and I

saw those same berths—it is true, with change of linen sheets and pillow-cases, but with no change of blankets, mattresses, or pillows—occupied that very night by other travellers, who were thus subjected to contact with a pathogenic microbe far more tenacious of life and power of evil-doing than the dreaded cholera spirillum. One has only to sit in a crowded street car on a winter day and watch the clouds of respiratory steam circling from the mouths and nostrils of the unclean and diseased into the mouths and nostrils of the clean and healthy, as the expiratory effort of the one corresponds with the inspiratory act of the other.

" The road is short but straight and sure from vomica and mucous patch to the receptive nidus in another's body. Who that has ever had forced upon him an aerial feast of cabbage, onions, garlic, alcohol, tobacco, and the gastric effluvia of an old debauchee can doubt that aqueous vapor can transport microscopic germs by the same route? Not long ago I travelled by sea from New York to Charleston, and for two nights was cabined with some twenty consumptives going to Florida. The air was chill and they huddled around the stoves and fearfully and fearlessly closed doors and windows, until the atmosphere became stifling with their emanations and the dried sputa which they ejected on every side. It was comparatively easy to escape during the day by staying on deck, and I slept with my stateroom windows wide open, but the curtains, carpets, pillows, and mattresses had been saturated by I know not how many expectorating predecessors. I have visited fifty small-pox patients a day, have gone through yellow-fever wards, and stood by cholera bedsides with far less apprehension than I experienced on that trip, yet it was one taken by thousands of people, who would have been terrified to know that there had been a case of cholera within a mile to leeward of their homes."

Now let us for a moment digress and suppose that instead of the conditions Dr. Gihon has so graphically described, and which almost any one having had occasion to make long journeys over our trunk lines of railroads can duplicate over and over again—that instead of diseased men, women, and children there were to be found Texas steers, glandered horses from New York, or diseased animals from any part of our

country. Would such diseased animals be allowed to travel in close proximity with other cattle? Certainly not. But if any one disbelieves this assertion let him start from Texas or Wyoming with a carload of diseased animals with the intention of finding a market for them in New England. He will not get far before he will find that he is the centre of a cyclone, and will be expected to run a bureau of information. It will be exceptional if he can travel twenty-four hours before every cattle commission and board of agriculture in the United States will be informed of the dangerous character of his herd, and protests against his being allowed to go from State to State will reach him from all directions. The transportation companies will also be notified that they are transgressing the law in opening an avenue by which contagious and infectious disease may be spread among other herds of cattle that are now in a healthy condition. Boards of cattle commissioners all along the expected route will assume unusual activity; telegrams will be sent over the wires at lightning speed; distinguished experts in veterinary medicine and surgery will be consulted; the federal power at Washington, as represented by a distinguished member of the President's Cabinet, will be apprised of the dangers to be apprehended and appealed to by those who have good reason to believe that the transportation of diseased cattle through the country is liable to become a menace to the material interest of a large class of our citizens; and all these efforts proving unavailing, the strong arm of the law will be invoked to prevent the transportation of diseased animals, and the transportation companies will be made the defendants in suits brought to recover damages.*

There can be no doubt but it is a simple act of justice to our agricultural friends to promptly and intelligently meet such an emergency, and I believe I have as much sympathy for the welfare of the lower animals as any one, and would be glad to insure them at all times the kindest treatment and the best of care in all their conditions; yet I must admit that,

* While this paper was in preparation the writer saw in the daily press a statement to the effect that a large cattle owner in one of our Western States had commenced suit for damages against a railway running through his ranch, on the ground that the road had been guilty of transporting diseased cattle, and as a consequence his herd had become affected.

under similar circumstances, I should like to see the same spirit prevail in regard to the human race, so that where epidemic influences are abroad we could appeal to the strong arm of the law and call to our aid expert knowledge with the same facility that can be done for the brute creation.

Dr. C. W. P. Brock, in his address as President of the National Association of Railway Surgeons, at its meeting in Omaha, refers to this subject in the following eloquent language:

"Human beings, born to immortality, are entitled to as much protection as the dumb beast; but it is not accorded to them by the laws governing the transportation of the country. The government has established a 'Bureau of Animal Industry,' to prevent the exportation of diseased cattle and to provide means for the suppression and to prevent the dissemination of contagious and infectious diseases among domestic animals, and makes an annual appropriation for the support of the Bureau, and assigns a Cabinet officer to the head of it. This officer can stop the shipment of domestic animals from any section of the country he may see fit, and issue specific directions how the cars, pens, etc., shall be disinfected. Now this is as it should be, and shows wonderful foresight and care on the part of our great Government in protecting the pockets of her citizens from loss by the disease and death of their domestic animals. But how is it when you come to human beings? Why, absolutely no protection is afforded to them. If there was a money value attached to each individual that would make him equal in value to one of these domestic animals, Congress might be moved to the enactment of laws for the protection of those who are but little lower than the angels, and created in the image of God Himself. 'Man's inhumanity to man makes countless millions mourn.'"

At this point we may naturally inquire whether as surgeons to important railway interests we have any duties to perform regarding railway sanitation. It is true that in some sections of our country railway directors and managers seem to regard us as a necessary evil (like a fire extinguisher, only to be used in case of fire), our services only to be called for in case of accident, and only paying for such services, they very soon

only think of us as in some way connected with misfortune. In this they are very much like other people, for the majority of the public do not, as a rule, think it necessary to consult us except misfortune overtakes them or some member of their family. Yet there has been a marked improvement during the last decade, for the public is becoming more and more alive to the necessities of personal hygiene as well as public sanitation.

In this way public sentiment in matters pertaining to sanitation is fostered and developed, until State and municipal authorities are warranted in making and maintaining wholesome rules and regulations governing the hygienic conditions of individuals and communities.

Such being the fact, we may confidently expect that the managements of our railways will find it for their advantage to take more advanced ground, and instead of following in the wake of public sentiment take a new position, and either establish a department of hygiene in connection with surgery, or arrive at the same conclusions by some other means that will suit them better. They must in some way take cognizance of the sanitary condition of their cars, grounds, depots, and warehouses, as well as of those accidentally injured along the line. It is quite certain that the patron of the road who is enabled to make a journey across the continent, without suffering the discomforts arising from the lack of an intelligent care of the heating and ventilating of coaches, and who can arrive at his destination in a good, sound, healthy, vigorous condition, ready for business so soon as the train comes to a full stop, will never forget that line nor fail to draw congratulatory conclusions regarding the management whose intelligent care has been the means of rendering such results possible.

Pet animals, although their owner may be quite willing to pay a fare, are generally consigned to the baggage car, and this without regard to whether they are in health or diseased; yet it will not do to send a passenger to the same compartment, and especially one that is seriously ill. Therefore on great through lines the transportation of invalids is liable to become a serious question to the general manager. The invalid seeking a change of climate in his search of health will naturally resent the imputation that his presence is a menace

to the health and lives of others; while those who believe themselves to be in good health will object to being associated for long-distance travel with those suffering from tuberculous and other infectious disease. Sooner or later it is quite probable that on through routes to Florida, Colorado, New Mexico, California, and other places a hospital car will become a part of the train service, the number of trips per month to be regulated by the demand. Such cars should be constructed under the direction of our most expert sanitarians, and should have all the important improvements in heating, ventilation, and appliances for the comfort of invalids and their attendants, but all luxurious appointments, such as curtains, carpets, and plush coverings, should be reduced to the minimum, and every part of the coach and its fixtures should be so arranged that it could be cleaned and completely disinfected at any station, or, if need be, the same could be thoroughly accomplished while *en route*. Other things being equal, a car of the boudoir pattern, somewhat modified, would probably meet the wants of that class of travellers better than almost any other of our present style of coaches, as curtains and other things that would become soiled and unwholesome could be reduced to a minimum or left out altogether in the furnishing of the car.

I am not a practical mechanic, and therefore feel a diffidence in making suggestions which require the approbation of a master mechanic, but it would seem to the professional mind that with our present means of heating with steam direct from the engine, it should be a very easy task to arrange for the complete disinfection by steam and that it might be done very expeditiously. This is a matter in which the expert sanitarian and the practical mechanic must meet on mutual ground and agree upon some method that will be effectual and secure the confidence of the public; at the same time it must be simple and comparatively inexpensive, else it will not receive attention from the trainmen and others to whom it would have to be intrusted. I should have some doubt of such a coach being at once self-supporting, much less of its ability to pay a dividend on the amount invested, yet it is quite possible that in advertising the trunk line over which it was intended to run at regular intervals, it might prove as profitable

as any other means of bringing the route into favor with the public. To do this it must be constructed on such mechanical and hygienic principles as to commend itself to every one having occasion to investigate its use; and the possibility of its being thoroughly cleaned and disinfected must be obvious and recognizable by all classes of people, else distrust instead of confidence will be engendered, and therefore it would fail of accomplishing the grand work for which it was intended.

SIX MINUTES FOR DINNER!

THE observations of travellers are always interesting. Mr. George Anderson, councillor of the Adelaide (Australia) Corporation, has just made a trip "through England, Scotland, Europe" (England and Scotland not being in Europe!), "and the two chief countries of North America." Mr. Anderson found a great deal that surprised and delighted him in connection with the progress of electricity as applied to lighting, locomotion, and mechanical arts, but he did not admire our system of railway management:

"The Americans are in too great a hurry, and the hurry leads to carelessness which on its side leads to terrible disasters and loss of life. When Martin Chuzzlewit landed in the States the average time allowed for meals was apparently about five minutes. As a concession to civilization, they have in the East extended the time to about six, and most of the meals are so cooked that they can be swallowed with as little mastication as possible. But when the nature that takes its food with such remarkable speed that it pays little regard to effective digestive processes comes to deal with the delicate machinery of railway administration, its bungles become hopeless and shocking. Accidents are so frequent that they are enough to scare the hardened and much-travelled, let alone the timid and the first-trip-from-home excursionists. Along the tracks you can see the black patches where railway catastrophes have been finally extinguished by destroying the wrecked remains with fire." Mr. Anderson was in two accidents of a really serious character. To be sure, he came out unscathed, but the inconvenience and delay—a twelve hours'

late arrival in New York, with no food since the morning of the previous day, was one of them—were enough to make him heartily sick of railway management as it is known in the States.

It is really surprising how many things an observant foreigner will discover. It is probable that if we were to take a trip through England, we might bring home the news of a great many astonishing things that the inhabitants of that snug isle never heard of! The writer hereof travels from ten to twenty thousand miles per annum on the railroads of the United States, and has done so for about thirty-five years, and while he has seen a great many places along the tracks where old ties had been burned, he never saw Mr. Anderson's "black patches" where wrecked railroad trains have been put out of sight by burning; and while he has often felt constrained to kick at the unseemly haste involved in "twenty minutes for dinner," it is a great comfort to him that he has never been over those American railroads which subjected poor Mr. Anderson to the barbaric limit of six.

It is a fair query as to whether or no Mr. Anderson has been "stuffed"? English tourists in this country sometimes come across very wicked Americans! One of the latter sort was, not long since, riding on a train between this city and Philadelphia; his next neighbor was an Englishman who was complaining of the rate of speed, the style of accommodation, the tameness of the scenery, and various other matters, but his particular grievance was the slowness of the train. Said our wicked friend, "Why didn't you go on one of the fast trains if you were in a hurry to get to Philadelphia? *This* is one of our slow trains; it stops at every station and takes a couple of hours between termini. You should have just stepped on board one of our lightning expresses and gone straight through from New York to Philadelphia in thirty minutes. They send those trains three or four times an hour. You simply got on the wrong train." And the matter all went down in the Englishman's note-book.

Somewhat further West, an Englishman met a wicked Yankee in the Yosemite. They were looking at that wonderful rock El Capitan. "Beautiful!" exclaimed the Yankee, "Beautiful!" echoed the Englishman. "What a wonderful

place for an advertisement," said the Yankee, "you could paint 'Castoria' on that rock in letters pretty nearly a quarter of a mile high." "Do you think they would allow it?" exclaimed the horror-stricken Englishman. "Allow it?" responded the Yankee, "I believe I will go directly home to New York and form a syndicate for the express purpose of advertising that sort of thing all over this part of the country," and it all went down in the Englishman's note-book, and when he got home he probably reported as one of the atrocities of American manners and ideas that the rocks of the Yosemite were to be filled with the advertisements of patent medicines!

Even Yankee market-women are not free from this same vice, for we have it upon the authority of an ancient comic almanac that a young Englishman, passing through an American market, put his cane upon a pumpkin which lay in a pile, and said, "You call them big h'apples? Why, they hain't nothing to the h'apples we 'ave in h'old h'England!" "Apples," shouted the market-woman; "they ain't no apples; them's huckleberries!"

It is just barely possible that our accident and life insurance companies may find something in the above relevant to their business; if not, then we shall be compelled to submit it to a committee of three, to be appointed by the chair, as to whether there really is any insurance in it.—*Insurance Monitor.*

SUBTERRANEAN LONDON.—It gives an impressive idea what subterranean London is fast becoming, says the *Daily News*, to learn that on emerging from the river the new City and Waterloo line will, in its passage up Queen Victoria Street, run for a part of the way underneath the low level main sewer, which in its turn runs along beneath the District Underground Railway. So that at this point in the city we shall have first a busy main thoroughfare, below that a steam railway, then a huge metropolitan sewer, then an electric railway, reaching its terminus at a depth of about 63 feet below the streets, and here it will communicate with another line—the Central London—which will lie at a depth of 80 feet.

THE BERKSHIRE HILLS.

By WILLIAM HENRY THAYER, M.D.

THE region known as the Berkshire Hills has become so popular a resort for summer visitors from the cities, that a brief description of its characteristics, especially of its sanitary advantages, will be of interest to the readers of THE SANITARIAN.

Berkshire County includes the western extremity of the State of Massachusetts. It is a mountain region. The Green Mountain range, which extends through Vermont, across Massachusetts and western Connecticut, nearly to Long Island Sound, constitutes the Berkshire Hills. It has two mountain ranges nearly parallel—the Taghconic, which lies along the New York State line, and the Hoosac, a few miles to the eastward of the other. Between the two the country presents an irregular collection of hills and valleys, with lakes and brooks feeding the Housatonic River, which, rising near the centre of the county, runs south through Connecticut into Long Island Sound. Toward the northern portion of the county Green River has its source, and runs northward till it empties into the Hudson.

The Hoosac range is unbroken by any pass through which a railroad could be constructed, except that through which the Boston and Albany Railroad was carried—at an elevation of twelve hundred feet above the sea. In this pass lies the town of Dalton, seat of extensive paper-mills famous throughout the United States. The Hoosac Tunnel, six miles in length, through which the Troy and Greenfield Railroad passes, pierces the mountain at North Adams, near the Vermont line.

These mountain ranges are covered with forests, except where, here and there, the lamentable ignorance of good forestry leads to wholesale clearings. The territory lying between these border ranges—varying from four to six miles in width—contains many towns and villages, besides a farming population.

The territory between the Connecticut and Hudson rivers presents a marked contrast in geological conditions to that east of the Connecticut River. New Hampshire and that part of Massachusetts east of the river have a granite foundation. But the Green Mountain ranges are chiefly of limestone, which gives a richness to the soil, that clothes the mountains with verdure to their tops, and furnishes throughout the country the best farming land in New England—which in many cases is improved to the utmost, in farms varying from one hundred to one thousand acres in extent, profitable and beautiful.

The chief towns of the county have naturally grown up along the valley of the Housatonic, where it winds about through the hills; from Pittsfield, near its source, through Lenox, Stockbridge, Lee, Great Barrington, and Sheffield into Connecticut. Pittsfield is the county town, and is now a city, with eighteen thousand inhabitants and the various public advantages; but this and all the other beautiful towns named have a rural character. Their charming streets and roads, shaded with elms, are lined with detached houses with ornamental grounds, and every one takes pride in having them as attractive as cultivated nature can make them.

All the towns mentioned have been a favorite summer resort for some years past; and many New Yorkers and others have built country seats there, as is well known. Lenox and Stockbridge especially are almost wholly occupied during the summer season by families from outside. The beauty of the scenery everywhere, the agreeable climate, dry and cool compared with that of New York City, and, of paramount importance, its healthfulness, furnish attractions that cannot well be surpassed.

The good sanitary conditions come from a porous soil—thereby good drainage—and a high altitude; these towns being from one thousand to twelve hundred feet above the sea-level. The mean temperature is therefore 10° F. lower than that of the vicinity of New York City; and the superior dryness of the air increases still more the difference of sensation in winter or summer. Any one accustomed to the two climates will notice a difference of feeling between them of 20° of temperature at all seasons. This is true of the climate

of the interior everywhere, except in low and wet situations, as compared with that of the seashore.

The water used in the various towns comes from mountain springs. Pittsfield has a public supply, brought by aqueduct from a lake in the neighboring town of Washington, near the top of a hill three hundred feet above the city level.

It is hardly necessary to say that a change from the city to such a region during the summer brings health to the invalid; that it saves many lives of infants, which would inevitably have been sacrificed by a summer in the city. Every physician knows that such a change to a child already ill with diarrhœa brings restoration, which all his care in the city could not accomplish. He is carried a little way out of town, with only partial benefit; but as he is removed to a greater altitude, with its still lower temperature, health returns.

The climate is also especially favorable to consumptives. Continued life out-of-doors in the Berkshire Hills is successful in arresting tubercular disease while in its early stage. It is a well-established fact that it flourishes mostly in low and wet situations—is cultivated by soil moisture—that under such conditions the infectious agent (*bacillus tuberculosis*) takes root in the system the most readily; and that in elevated situations, on a dry soil, it finds least encouragement for development in the system. "The registration reports show that the mortality from consumption is less in Berkshire than in any other county of the State, being but little more than half what it is in some of the maritime counties." Pittsfield has a good hospital, the House of Mercy, established in 1874 by private benefaction, receiving patients from every part of the county. It has had several endowments of value since its foundation, and is very complete in all its appointments. A training school for nurses is connected with it, from which nurses are obtainable for private residences when needed.

I have thus far spoken chiefly of the southern half of the county, in which lie most of the towns named. The physical characteristics of that part north of Pittsfield are the same, but the country differs from that below in being more rural. At Pittsfield begins a distinct central range of hills, running northward, rising gradually for twenty miles, a succession of peaks, culminating at last in Greylock Mountain, forty-one hundred feet high, the greatest elevation in Massachusetts.

On each side of this interior range is a continuous valley. The eastern one has a string of towns, largely manufacturing, including Cheshire, Adams, and North Adams, getting their water power from the Hoosic River, which rises just north of Pittsfield, in the township of Lanesborough, and runs north through the southwestern corner of Vermont into the Hudson. Through this valley runs the Pittsfield and North Adams Railroad, a branch of the Boston and Albany.

The western valley is for the most part purely natural, without mills or railroads. It begins in Pittsfield and ends in Williamstown, the northwestern town in the State and the seat of Williams College. The road runs almost level through the little village of Lanesborough and scattered farms, and finally winding through a narrow valley in and out among the mountains, giving a variety of the most charming scenery. No railroad here disturbs the quiet of nature, only a farm here and there reminds you of humanity. There is not a more delightful drive in all Berkshire. Whoever wants retirement will find it here. It has not yet attracted city dwellers to settle, and the charms of nature are little disturbed by man. The drive ends in Williamstown, a village which is the outgrowth of Williams College; where a favorable situation upon a knoll in sight of Greylock—only three miles to the southeast of the town—has been improved in good taste, in its wide main street, with four rows of elms and broad greensward separating its attractive homes and college buildings.

Within a few years, free public libraries have been established in nearly all the towns of Berkshire County, as indeed throughout the State, under the fostering care of the Free Public Library Commission, created by the Legislature for aid and encouragement to towns, especially the smaller and poorer towns. In the larger towns free public libraries had already been established. That in Pittsfield, the Berkshire Athenæum, founded by a rich native of the town, had in 1891 18,000 volumes, and is well endowed. The Lenox Library had at the same time 8000 volumes; the Stockbridge Library, 6000; the Great Barrington Library, 6000; the Williamstown Library, 3000. Dalton had in its public library 2000 volumes, and there was in this town also the Crane Library of 1000 volumes, supported by the Crane Paper Company for the use of its employés.

The mountain ranges westward of the Connecticut River and valley, interposed a serious obstacle to Boston influence and intercourse before the time of railroads; while commercial and social relations with New York were more easily established, and the habit of early intercourse has never worn out. Boston theology did not reach Berkshire. Liberal Christianity was unknown there. In 1889, when a Unitarian society had been organized in Pittsfield, through the means of some families which had then recently settled in that vicinity, the minister went every Sunday afternoon during the summer to Great Barrington, twenty miles south of Pittsfield, to preach, by invitation of a few Unitarian summer residents. One Sunday after service, a middle-aged native of the town went up to speak to the preacher, and said, "If you people in Boston knew all these things, why haven't you told us before?"

The communication with New York is easy by the Housatonic Railroad, which runs from the New York and New Haven Railroad at Bridgeport, Conn., through the Housatonic Valley as far as Pittsfield, passing through the chief towns already mentioned. Or, for the northern part of the county, by the Harlem Railroad to Pittsfield.

Pittsfield, Lenox, and Stockbridge are classic ground, through association with Longfellow, Holmes, Miss Sedgwick, Hawthorne, Beecher, and others. Fanny Kemble, during a summer residence of some years in Lenox, illustrated her own peculiarities more than she illustrated the town. A good story is told of her. When she first lived in Lenox, she employed a native of the place to drive her about. He naturally began to describe the country and the people to her as they drove along. Till finally Mrs. Kemble said, in her high-tragedy manner, "I have engaged you to drive for me, sir, and not to talk." The farmer ceased, pursed up his lips, and in all their subsequent drives preserved his silence. At the end of the season he brought in his bill for the summer services. Running her eye down its awkward columns, she suddenly paused at something she didn't understand. "What is this item, sir? I cannot comprehend it." With equal gravity the farmer replied, "Sass, $5. I don't often take it, but when I do, I charge." Mrs. Kemble paid the bill without further comment.

BERKSHIRE, MASS., March 17, 1894.

SANITARY TOPOGRAPHY, CLIMATE AND MINERAL SPRINGS OF MARYLAND AND DELAWARE.

By A. N. Bell, A.M., M.D.

MARYLAND lies between the parallels of 37° 53′ and 39° 44′ north latitude, and the meridians of 75° 2′ and 79° 30′ west longitude, comprising an area of 11,124 square miles, exclusive of the waters of Chesapeake Bay and several islands. The State is naturally divided into three sections: (1) The eastern shore peninsula, a continuation northward of the eastern shore of Virginia, between the Chesapeake Bay and the Atlantic Ocean; (2) between Chesapeake Bay eastward and the Potomac River to the junction of the Shenandoah and South Mountain range of the Alleghanies westward; and (3) between South Mountain and West Virginia, all bounded on the north by Pennsylvania. The eastern shore is generally sandy and level, and in some places swampy and malarious. The northern portion of the mainland is somewhat rocky and broken, better drained and healthful. On the sea side, outlying an extensive sound, commonly called the Broadwater, Chincoteague, an inhabited island, several smaller islands and a long line of sand-dune barriers which receive the Atlantic surf are famous as fishing and duck-shooting rendezvous, and are frequently resorted to for health and pleasure. The creeks and coves on the bay side of the peninsula are alike attractive to sportsmen, particularly for those who seek canvas-back ducks; and some of the islands as summer resorts and for camp-meetings.

The second section, that lying between Chesapeake, Bay and the Potomac River, is, in the southern portion, also sandy and generally level, and in some places, like the eastern shore, swampy and insalubrious. But above Washington, on the Potomac, the face of the country becomes hilly, and afterward, as it merges into the third section, the common source of numerous rivulets and rivers which conflue or empty into Chesapeake Bay, is a well-drained, picturesque, mountainous and salubrious region.

The principal river in the State is the Potomac, which rises

in the mountains of West Virginia, and flows northeast, east and southeast for a distance of 450 miles, and for nearly 200 miles navigable. The lower portion of this river, below Alexandria, is rather an estuary than a river, being for the most part of its course thence to the bay of great breadth, and its shores in that section are mostly low and swampy. The climate of Maryland is generally equable, temperate and healthful, except as influenced by the surface conditions of the marshy lands referred to.

The average mean temperature in the coldest section of the State—in the mountainous portion of Garrett County—is 51°.1.

Meteorological observations for a series of years, registered at Baltimore; Woodlawn, Cecil County; St. Inigoes, St. Mary's County; Frederic City; Washington, D. C., and Emmettsburg, Frederic County, show:

Average mean temperature	52°.33
Maximum temperature of year	98°
Minimum " " "	6°.3
Range of " " "	95°.17
Average mean temperature of spring	49°.89
Maximum temperature " "	87°.1
Minimum " " "	8°.50
Range of " " "	78°.50
Average mean temperature of summer	75°.30
Maximum temperature " "	97°.18
Minimum " " "	50°.68
Range of " in "	47°.2
Average mean temperature of autumn	52°.52
Maximum temperature " "	89°.18
Minimum " " "	22°.17
Range of " in "	67°.1
Average mean temperature of winter	31°.22
Maximum temperature " "	60°.34
Minimum " " "	15°.66
Range of " in "	52°.67
Rainfall for year	46.12 inches.
" in spring	11.8 "
" in summer	12.13 "
" in winter	11.25 "

The mineral springs of Maryland appear to have been neglected—probably on account of their proximity to and the celebrity of those of Virginia—and several, reported by Dr. Peale,* once used extensively, are now abandoned. Four only have published analyses.

Chalybeate.

Bentley's Springs, Baltimore County. W. E. A. Aiken, analyst.

Sodium carbonate,	grains	per gallon	0.46
Magnesium carbonate,	"	"	0.68
Calcium carbonate,	"	"	0.64
Iron carbonate,	"	"	0.89
Calcium sulphate,	"	"	0.35
Sodium chloride,	"	"	0.27
Silicic acid,	"	"	0.43
Organic matter,	"	"	0.91
Loss,	"	"	0.43
Total	"	"	4.66

Calcareous.

Station Spring (Bentley's Springs). A. E. W. Aiken, analyst.

Sodium carbonate,	grains	per gallon	0.37
Magnesium carbonate,	"	"	0.26
Calcium carbonate,	"	"	0.34
Calcium sulphate,	"	"	0.30
Sodium chloride,	"	"	0.19
Alumina,	"	"	0.02
Silicic acid,	"	"	0.33
Iron,	"	"	trace.
Organic matter,	"	"	0.37
Total	"	"	2.18

* *Bulletin* 32, U. S. Geological Survey. Albert C. Peale, M.D.

Alkaline.

Strontia Mineral Spring, Brooklandville, Baltimore County. W. Simon, analyst.

Calcium bicarbonate, parts in 100,000	6.75
Strontium bicarbonate, " "	1.86
Iron bicarbonate, " "	0.88
Strontium sulphate, " "	0.22
Sodium nitrate, " "	1.43
Potassium nitrate, " "	4.66
Sodium chloride, " "	12.87
Magnesium chloride, " "	6.72
Calcium chloride, " "	35.46
Alumina, " "	1.86
Silicic acid, " "	2.05
Phosphoric acid, iodine, ammonia and organic matter	trace.
Total	74.76

Gases:

Oxygen, cubic inches	0 82
Nitrogen, " "	1.22
Carbonic acid, " "	3.50

Calcareous Acidulated.

Flint-Stone Mineral Springs, Flint-Stone, Alleghany County. Hector Humphrey and David Stewart, analysts.

Magnesia, grains per gallon	12.74
Lime, " "	38.16
Sulphuric acid, " "	71.68
Carbonic acid, iodine, ammonia and organic matter, per gallon	51.42
Total	174.00

Alleged properties—not analyzed.

Belinda Springs, Washington County.

Bery Springs, Takoma Park, Montgomery County. Chalybeate.

Bingham Spring, Talbot County.
Blue Sulphur Springs, Pine Grove, Alleghany County.
Calcic Springs, near Hagerstown, Washington County.
Carroll White Sulphur Springs, Alleghany County.

Chalybeate Springs:
Six miles from Easton, Talbot County;
Near Hancock, Washington County;
Near New Windsor, Carroll County;
In Queen Ann's County.
Ennall's Spring, Talbot County.
Goldsborough Springs, near Dundee, Talbot County.
Barren Creek Springs, Wicomico County.
Lloyd's Spring, near Lloyd's Landing, Talbot County.
Sulpho-chalybeate Spring, Garrett County.
Saline-chalybeate and Lithia Spring, Green Spring Furnace, Washington County.
Outram Springs, south of Easton, Talbot County.
Ridgway's Springs, west of Easton, Talbot County.
River Springs, Saint Mary's County.
Spa Springs, Bladensburg, Prince George's County.

Sulphur Springs:
Sulphur Springs Station, B. & P. R. R., Baltimore County.
Near Williamsport, Washington County.
Near Indian Springs, Washington County.
Warm springs, one mile from Flint Stone, Alleghany County.
Windsor Sulphur Springs, near Windsor, Carroll County.
Cecil Spring, Cowentown, Cecil County.
Chattolanee Mineral Spring, Chattolanee, Baltimore County.

DELAWARE forms the northeastern portion of the peninsula between the Chesapeake and Delaware bays and the Atlantic Ocean, comprising an area of 2120 square miles, situated between the parallels of 38° 28′ and 39° 50′ north latitude, and between the meridians of 75° and 75° 46′ west longitude from Greenwich. The face of the country is for the most part nearly level, and except on the shores of the Delaware Bay and River, sandy. There is, in the northern portion, some fine rolling country, with pleasant hills and dales, but no mountains. The principal, indeed the only, variation from

the general level of the lower portion of the peninsula common to Maryland and Virginia is a sandy ridge beginning just below New Castle and trending southward near the western boundary, and forming the backbone of the State, but nowhere exceeding seventy feet in height, and some portions of it marshy. From the marshes of this ridge most of the streams which drain the State take their rise, their affluents being the Pocomoke, the Nanticoke, the Choptank, the Chester and the Elk rivers, which flow into the Chesapeake; while the Brandywine River and numerous creeks are tributaries to the Delaware River and Bay, or flow into the Atlantic below Cape Henlopen.

The climate of Delaware is almost identical with that of the eastern shore of Maryland.

Chalybeate mineral springs are said to exist at Faulkland, west of Wilmington, in New Castle County; near Dagsborough, Sussex County; and near Dover, in Kent County; and a *sulphuretted* spring ten miles from Dover, in Kent County. But no one seems to have thought enough of them to have the waters analyzed or to have done anything to promote their use.

MINERAL WATER STATISTICS for the year 1893, as given in a special report of the United States geological survey prepared by A. C. Peale, M.D., show that the list of waters used commercially during the year is the largest on record.

The total number of these springs was 328, an increase of 45 over the previous year. The total production was 23,544,495 gallons, at a valuation of $4,246,734. This is an increase of 1,667,891 gallons, but a decrease of $659,236 in the value over last year. The average price per gallon was 18 cents against 22½ cents for 1892. The list of waters used commercially shows a net gain of 25 in the North Atlantic States, a gain of 4 and loss of 1 per cent in the South Atlantic States, a gain of 14 and loss of 5 in the North Central, a gain of 3 in the South Central and a net gain of 5 in the Western States and Territories. The decrease in production is 586,412 gallons and in value $286,846.

The production and valuation for the year by States and Territories are given as follows: Alabama, 17,900, $13,637:

Arkansas, 76,989, $11,160; California, 288,179, $190,667; Colorado, 125,992, $48,003; Connecticut, 50,100, $7692; Georgia, 86,000, $14,600; Illinois, 118,800, $8440; Indiana, 140,000, $12,650; Iowa, 69,100, $10,770; Kansas, 49,600, $5549; Kentucky, 5700, $7925; Maine, 869,917, $138,930; Maryland, 86,100, $11,650; Massachusetts, 7,564,400, $118,436; Michigan, 610,900, $174,232; Mississippi, 166,400, $47,355; Missouri, 399,500, $143,075; Montana, 16,840, $6078; New Hampshire, 1,409,125, $702,281; New Mexico, 6000, $750; New York, 1,942,850, $595,376; North Carolina, 317,700, $79,926; Ohio, 1,072,200, $48,640; Oregon, 29,200, $8800; Pennsylvania, 1,060,800, $247,240; Rhode Island, 145,000, $9000; Tennessee, 44,500, $7577; Texas, 359,750, $21,957; Vermont, 97,000 $24,400; Virginia, 447,559, $187,045; Washington, 37,100, $33,375; West Virginia, 28,730, $8515; Wisconsin, 5,705,212, $652,703.

Other States which have reported to the survey, though having only one spring each, aggregate 20,092,033 gallons and value the output at $3,652,962.

THE NATION'S SIN OF OMISSION.*

By T. J. BENNETT, M.D., of Austin, Texas, Chairman of Section on State Medicine and Public Hygiene, Texas State Medical Association.

THE Constitution of the United States guarantees to every citizen life, liberty and the pursuit of happiness. The laws of the country have been framed by wise men, after careful study and observation, looking to these ends; and, in a sense, every enlightened government is "paternal." It is jealous of any infringement of these rights, and the humblest citizen can claim, and through the courts receive, protection in his life, liberty and property; and any trespasser upon either is swiftly punished. The arbitrary arrest, in a foreign country, of the humblest person, claiming protection of the Stars and Stripes, is resented, his liberty secured, and restitution demanded, and the demand is backed, if need be, by the whole military and naval power of the country.

* Paper read at meeting of Texas State Medical Association, at Austin, April, 1894.

The laws in respect to life and liberty, and in regard to peaceful possession of one's own, and the enjoyment of the fruits of his labor, have been amended and made better, as time and experience have revealed defects, and as changed conditions have made necessary.

The laws with regard to special privileges are framed with an eye to the protection of the life, liberty and property of others, and of society generally. No man is permitted to conduct a business the nature of which threatens society with danger—such, for instance, as the running of railroad trains and steamboats, and the operation of factories, mills and shops; and such conditions are attached to the privilege, when granted, as to reduce the danger to others to the minimum.

In return for this protection and paternal guardianship the citizen is taxed to carry on the operations of the machinery of government, and certain duties are required of him, all of which are duly specified, and made compulsory, under a penalty for neglect, failure, or refusal to perform them. He shall serve on the jury, do certain road work, and, in time of war, shall bear arms in defence of the country; or he may be impressed by any sheriff to put down any local lawlessness. He is taxed, moreover, for the support of the defectives, and for schools and poorhouses.

As civilization has advanced, and experience demonstrated the necessity, laws have been enacted which throw every protection around one's live stock. His cattle are protected from infectious diseases by expensive quarantine, if need be; and, especially in Texas, the theft of cattle—a horse more particularly—is a most heinous crime.

But with regard to the *health of the citizen*, there is, in Texas and some other States, a woful lack of either solicitude or legislation. The most ignorant man is permitted the dangerous privilege of practising medicine, without a restricting clause in the law. He is licensed by the possession of a diploma alone—it may be stolen or purchased—which, according to Webster, is only a certificate or "evidence of a degree having been conferred," and "conveys no rights or privileges whatever" to enter the community, to invade the family of his confiding dupes and take in hand the life of any member;

to prescribe the most deadly drugs, of the properties of which he may be entirely ignorant, and, by his ignorance, kill with impunity. He can set aside the law in regard to the sale of liquor on certain days, and, by a prescription, can accommodate any old toper with the stuff he craves. Moreover, by virtue of his calling, he is exempt from certain duties to the State or county which other citizens have to perform. In short, the quack doctor, with or without a diploma, is one of the many and grave dangers that threaten society ; and in this State protection has, so far, been prayed for in vain ; the bugaboo of " personal rights" is pleaded, and the individual's alleged " rights" to practise medicine are respected, often to the great detriment of society. The citizen *has a right* to protection against this, as all other dangers—purchased by his taxes—and his support of the government and his obedience to the law.

Enlightened governments become enlightened through observation and experience ; and, as we have shown, our laws are amended, and jurisprudence, in every respect (except medicine), has developed *pari passu* with the progress made in the many relations of life and business.

The existence of a soul in man is said to be evidenced by the possession of the faculty of reason, and this faculty alone distinguishes man from the lower animals ; the power to reason, philosophers say, is evidenced by the ability to *profit by experience ;* and no race or people is thought to be capable of self-government who do not so profit. Estimated by that test, our boasted civilization is a myth, and our government unreasoning and unreasonable ; for it is evident to the most casual observer that it has failed to profit by past experience in dealing with one of the most vital and essential elements of danger—to-wit, disease. True, quarantine has been improved year after year, as experience has revealed defects and the necessity for additional requirements or changes, until it is now reduced to a rational system and is almost perfect. But, while we would not be thought to underestimate the value and importance of quarantine as against the invasion of foreign disease, we will aim to show that by attention to this feature of protection alone, to the neglect of internal sanitation, the government, to use a homely expression, is " saving at the

spigot and losing at the bung." The lives lost, the time lost, and the property values destroyed in time of the most destructive epidemic, are as a drop in the bucket to the lives, labor, and property being destroyed every day all over the country, by diseases *easily preventable;* and it is not by any means through ignorance of their nature and cause and the mode of prevention that this loss occurs, but by the apathy, indifference, neglect, failure—call it what you will—of the general and State governments to take hold of the subject, and, profiting by the experience and wisdom of the medical profession, apply the law to the eradication and prevention of the local and internal diseases, to amend the laws in accordance with the discoveries and recommendations of the medical profession—in short, to avail of the benefits and apply the principles of State medicine.

Society *has the right* to protection from typhoid-fever, consumption, and diphtheria, as well as from yellow-fever and cholera, or other danger of whatever kind; and it is clearly the duty of the government to secure it.

Recognizing, then, the fact that thousands of lives are annually lost through the agency of preventable diseases; recognizing that the general Government has failed so far to secure to society the protection to which every citizen is entitled, it is pertinent to inquire as to this grave omission.

In view of our civilization, the intelligent zeal with which laws have been framed for all other requirements of the citizen, whenever experience has shown what was best; the solicitude manifested for the safety of the poorest citizen, if in trouble abroad, it can hardly be said that it is either ignorance or indifference on the part of the law-makers that causes this sad lack of legislation, and the consequent great danger that threatens the public health. Our Congressmen, beyond doubt, have an intelligent appreciation of the maxim, "Public health is public wealth," and of the importance of health to the happiness and prosperity of our country. What, then, is the reason that in so many States no safeguard is thrown around that which is so essential to all other rights of the citizen—the possession of health? Why has not the general Government profited by the experience of sanitarians everywhere; utilized their observations and researches in the bacteriologi-

cal laboratory and at the bedside, and the results of experiments shown in abating disease by cutting off a vitiated water supply, for instance?

The question is easily answered: It is because there is no *organization* in the medical ranks, no co-operation between medicine and law; because there is no *head* to direct the vast energy of sanitarians and laboratory investigators, which, being expended spasmodically and individually, accomplishes nothing; no one to direct how the accumulated knowledge of medical and sanitary science may be utilized; no department devoted to this paramount interest, whence such information can be procured as will enable Congress to frame laws which shall constitute an intelligent application of means to ends—the adaptation of the principles of State medicine.

Individual effort counts for nothing. We have, all over the land, the most intelligent and indefatigable workers in biological research and in every field of medical and sanitary investigation. They find that certain deadly diseases are caused by the presence of a bacillus or its products, and they discover also its antidote. The knowledge that hydrophobia is caused by a poison in the salivary gland of a dog or other animal; the knowledge that, to date, no antidote has been revealed to Science—that she has no remedy even to palliate the dreadful sufferings of one inoculated with this poison—had as well never been acquired so far as any protection is afforded by law against this great danger. The same may be said with regard to many other sources of danger; no protection is afforded by law against polluted water, nor against diseased meat or decaying fruit and vegetables on sale at every stall in most cities. The medical profession is like an army of brave and capable men without a leader; each man is waging war upon his own hook against the invisible hosts of earth, air, and water, and each cries out singly for help from the strong arm of the law.

Were the statistics compiled by the State boards of health, showing the fearful mortality from preventable diseases, and the results that have followed even spasmodic efforts at sanitary reform brought to the attention of Congress by the united medical profession, it is not to be doubted that they would be convinced, and speedily enact such laws as would enforce sani-

tary reform everywhere. But, unfortunately, the profession is divided ; and each section represents to Congress a different course with reference to meeting the trouble. And Congress, for want of intelligent advice, really does not know what is best to be done.

As the American Medical Association comes nearer being a representative organization, reflecting the consensus of medical opinion, than any other in this country, the bill formulated by their committee and now before Congress should be regarded as the voice of the majority ; and it strikes us as being the first step in the sanitary reform needed.

In this connection the movement is of vast importance. Indeed, it is the most important matter now engaging the attention of the medical profession. In that bill the many sources of danger are pointed out, and suggestions are made for compilation of such statistics and the gathering of such information generally into one office as will enable the secretary to give to Congress the exact data upon each subject, upon which to frame laws to meet every requirement.

Certain States have been pioneers in this great work ; and, listening to the suggestions of their sanitarians, they have enacted laws which in a short time have reduced the mortality of certain diseases 50 to 100 per cent. Illinois, Ohio, Michigan, Massachusetts, and other States may be mentioned as setting a praiseworthy example. In Illinois, Dr. John H. Rauch—the Farr of America, peace to his ashes !—did more for sanitation and the advancement of preventive medicine than any man, living or dead. That State should erect to his memory a monument that will pierce the clouds, and in letters of living light inscribe upon it, "*Benefactor.*" The condition of affairs sanitary in Illinois before and after Rauch's measures of reform were inaugurated will serve as an illustration of what may be done by legislation based upon sanitary and medical knowledge.

The saving to the State by the wisdom of that one man, and the energetic and younger men who succeeded him and still further carried out the inspirations of his genius, if estimated in money, would pay the national debt, or the expenses of his government, ten years, and yet that is only one State. We will confine ourselves to Chicago, and briefly point out

the results in that city alone since the inauguration of the World's Fair. For the purpose, we avail ourselves of an admirable paper in the *Independent*, entitled "Some Sanitary Gains."

"In 1891, in Chicago, there was an average daily mortality from typhoid-fever of 5.4, chiefly young lives. There was a betterment in 1892, as a result of some sanitary attempts as to water supply and sewerage.

" . . . At one time in 1891 the percentage of typhoid-fever deaths was 16.6 in 10,000, making a total of 1997—only 3 short of 2000; and each death is justly presumed to represent 10 cases which recover.

" . . . Nobody doubted that the cause of the trouble was a polluted water supply. . . . Matters had considerably mended in 1892, but then the mortality was equal to that of Philadelphia in the Centennial year.

"It will perhaps present a more striking picture if we say that in January, 1892, there were 311 deaths from typhoid-fever in Chicago, while in the much more compact city of Brooklyn there were only 8. In May, 1891, half as many people died as in the whole of Massachusetts during the entire year. Such was the condition before the beginning of the World's Fair project, and people were afraid to go there. Sanitary measures were inaugurated. To be brief, a canal four miles in length was cut, which disposed of the sewage, and pure water was conducted to the city from a distance of twenty-five miles. Crematories for the disposal of garbage were introduced, and from being a city of naturally unhygienic surroundings, situated on the borders of a great marsh and lake, where sanitary engineering was not only difficult but very expensive, and having consequently a heavy death-rate, Chicago has become, while not a sanitary model, a standard for comparison with older and less densely and more favorably located cities like Baltimore and Philadelphia, the mortality from typhoid-fever having fallen from 311 deaths in January to 47 in December. And this was accomplished by laws in accordance with suggestions of the State Board of Health, based upon statistics compiled by the Board, and other sanitary knowledge, the result of individual experiment and research; an example of how medical knowledge can be applied by the State for the protection of the public health.

Should Congress create a Department of Public Health in accordance with the petition of the American Medical Association, it will be the first and most important step in the direction of remedying the great evil complained of—the unnecessary deaths of so many thousand people. In the committees' memorial to Congress the duties of the secretary of the department are suggested, and they cover every phase of sanitation, comprehend every subject that has a bearing upon the public health. When a head shall have been created and the department organized, all the discoveries of individual workers, all the statistics collected by State and local boards of health, will be focused there, collated and classified, and thus will be made evident what laws are necessary. The results of such compilation would be most astounding.

To give an illustration, even on a small scale, of the immense losses being sustained, we will take the deaths from preventable diseases in only one or two cities, and estimate in dollars and cents the value of the lives and time lost.

In the *Scientific American* is published, under the head of "Sanitary Negligence," a table showing the mortality of a number of cities in America and Europe (prepared by Mr. Carter, Secretary of the Health Department of Baltimore). From this table we take the following as illustrating the difference of mortality in the principal American cities.

The annual death-rate per 1000 inhabitants is as follows:

New York	26.47
Brooklyn	21.84
Chicago	18.95
Boston	23.88
Philadelphia	21.95
St. Louis	18.47
Baltimore	21.10
San Francisco	18.21
Cincinnati	19.67
Cleveland	18.19
Buffalo	16.28
New Orleans	28.72
Milwaukee	16.00

Minneapolis and St. Paul, 9.60 and 9.61 respectively.

The writer of the article says: "There is no more accurate gauge of civilization actually attained by cities than their comparative mortality tables. It is the object not only of medicine to save and lengthen human life, but it is [ought to be, but apparently it is not] also the supreme object of the entire governmental and social mechanism." "In a general way, the higher the death-rate the greater the indifference to hygienic conditions of life." "There is no reason, except a disgraceful reason, why New York should allow a death-rate of 7.36 higher than that of London (19.11). This means that New York permits the unnecessary death of 6630 of her citizens every year." "With a difference of death-rate between New York and Brooklyn, just across the river (4.63), New York is criminally chargeable with 4.171 additional and unnecessary deaths every year. As compared with Philadelphia, there are 4071 more deaths to her debit. And, as compared with Chicago, the appalling number of 6774. There is certainly no good reason why the mortality of Philadelphia and of Boston should be higher than that of Chicago; but the table shows that Philadelphia kills proportionately 1673 and Boston 1200 more of her citizens each year than the city that is accredited with drinking her own diluted sewage. It is plain that something is radically wrong."

And these comparisons were made, it seems, even before the great source of typhoid-fever, the polluted water of Lake Michigan, was abandoned and the introduction of pure water from a distance; the disparity in mortality, as compared with these same cities, must be still greater in future.

The excess of deaths in five cities over the deaths in Chicago foots up as follows:

Boston, as compared with Chicago	1,200
Philadelphia	1,673
New York	6,774
Brooklyn	1,413
Baltimore	490
Total	11,550

"This," says the writer quoted, "is the cost of criminal negligence of known laws of health in only five of our cities.

If London cared as little for the lives of her citizens as New York seems to care for hers, there would die in that city every year 21,556 people more than at present die." The money value of the lives lost in those five cities alone, as figured by the statistician quoted, is over $46,000,000, while the time lost by others sick—*i.e.*, according to Farr, there are two years of sickness to every annual death, or, in this instance (11,550 deaths), 23,100 years of needless sickness, which, estimated in money values, means, for lost time alone, $6,930,000, besides bills for the doctors, nurses, druggists and all other expenses. "And yet," says the writer, "when the city fathers are asked for a few thousand dollars for meat inspection, milk inspection, for new and necessary sewers, for an unpolluted water supply, or for any other measures of preventive medicine, the request is refused, or acceded to with such cringing stinginess as to be ludicrously inadequate." "In only five cities, and estimated in crude financial losses, we have seen there is a squandering of some $53,000,000. Extend the calculation—easily made—to the whole country, and it is recognized that we are wasting several hundred millions of dollars worth of human lives each year by our recklessness and our stupidity. The medical profession heroically works to save a few thousand sick, while the community goes on blunderingly and savagely killing and making sick by the million."

Our writer is wrong—as we have attempted to show—to attribute this fearful mortality to either ignorance, or stupidity, or parsimony, so far as the Government is concerned. It is a national sin to not lower the death-rate all over the United States; but it is a sin of omission in the failure to apply the vast concrete knowledge obtained by medical and sanitary science to the prevention of disease, in accordance with the clearest dictates of humanity, reason, justice and common sense. But this the general Government cannot do, or be made to see the necessity for doing, until provision has been made for collecting, compiling, and classifying this knowledge, and there is brought to its attention the cost in dollars and cents, of sanitary neglect; till the deaths all over the United States from preventable disease are consolidated, and it can be shown how much in money can be saved to the Government by the passage of laws to apply the remedy pointed

out by sanitary science. Until the Government recognizes the great necessity here attempted to be shown for the creation of a Department of Public Health, and creates it and puts it into operation, she must stand chargeable with criminal neglect, and held responsible for this fearful waste of human life.

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of March a mortality of 58, of which 31 were colored, and 15 were under five years of age. The annual death-rate per 1000 was 22.32.

Zymotic diseases caused 9 deaths, and consumption, 10.

ARKANSAS.—D. W. Holman, Secretary, Little Rock.

The State Board of Health has been given the power to revoke the license of any physician who is guilty of habitual drunkenness.

CALIFORNIA.—J. R. Laine, M.D., Secretary, Sacramento.

For the month of March the reports from 88 cities, towns, villages, and sanitary districts, aggregating a population of 773,287, show a mortality of 1074—a death-rate of 16.56 per 1000 per annum.

There were 193 deaths from consumption, 111 from pneumonia, 37 from bronchitis, 9 from congestion of the lungs, 60 from diseases of the stomach and bowels, 14 from diphtheria and croup, 1 from scarlatina, 7 from whooping-cough, 12 from typhoid-fever, 11 from *la grippe*, and 619 from other causes.

Reports of prevailing diseases from 55 localities, outside of the larger towns and cities, give 81 cases of pneumonia, 128 of bronchitis, 47 of pleurisy, 22 of congestion of the lungs, 65 of diarrhœa, 17 of dysentery, 6 of cholera morbus, 6 of cholera infantum, 9 of diphtheria, 31 of croup, 13 of scarlatina, 62 of

measles, 92 of whooping-cough, 214 of *la grippe*, 10 of typhoid-fever, 92 of malarial fevers, 2 of cerebro-spinal-fever, 25 of erysipelas, 122 of rheumatism, 85 of neuralgia, 116 of tonsilitis, and 61 of pharyngitis.

Measles was epidemic at Bishop, Madera, and in Fresno County. Whooping-cough was epidemic at Anaheim, College City, and Gridley. Chicken-pox was epidemic at Fresno Flats, Knight's Ferry, Fallbrook, and South Pasadena.

CONNECTICUT.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

Reports of mortality for the month of March were received from every town in the State, 168 in number, aggregating a population of 797,450.

There were 990 deaths reported in the State during the month. This was 79 less than in February, and 319 less than in March, 1893, and 187 less than the average number of deaths in March for the five years preceding the present.

The death-rate was 15.1 for the large towns, for the small towns, 14.3, and 14.8 for the whole State.

The deaths from zymotic diseases were 106, being 10.7 per cent of the total mortality. There were 125 deaths from consumption.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the four weeks ending April 28th a mortality of 474, of which number 216 were of colored people, and 158 were under five years of age. The annual death-rate was 21.4 per 1000. There were 65 deaths from zymotic diseases, and 54 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of February, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 498; number of marriages report-

ed, 411 ; number of deaths reported, 265 ; birth-rate per 1000 per annum, 15.26 ; death-rate per 1000 per annum, 8.13 ; average age of decedents, 30.24 ; number of deaths under five years of age, 84. Deaths from zymotic diseases numbered 36, and from consumption, 32.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000 ; A. R. Reynolds, M.D., Commissioner.

There were 1821 deaths reported during March, of which number 793 were under five years of age. The annual death-rate reported was but 13.68 per 1000, notwithstanding the unusual prevalence of zymotic diseases. Deaths from small-pox caused 100 ; croup and diphtheria, 87 ; typhoid-fever, 27 ; measles, 26 ; cerebro-spinal-fever, 23 ; scarlatina, 16 ; other zymotic diseases, 71—350. Deaths from consumption, 176 ; acute diseases of the lungs, 245.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowlirg Green.

LOUISIANA.—W. R. Harnan, M.D., Secretary, New Orleans.

New Appointments.—Dr. W. R. Harnan, Secretary, in place of Dr. Lucien Salomon ; and Dr. James F. Finney, Chief Sanitary Inspector, in place of Dr. F. W. Parham. However competent the new appointees, who have their reputations as sanitary officers to make, it is patent to all who are conversant with the health service of New Orleans that the Board, in dispensing with the services of Drs. Salomon and Parham, has lost two most efficient officers, who, from their long service, had acquired practical knowledge of all the details of the offices they held, have greatly contributed to the success of the Board in the protection of the public health.

Changes have also been made in the membership of the

Board by appointment of the governor : Drs. Charles J. Bickham and G. Farrar Patton in the place of two others whose terms had expired. Both these appointments are excellent, compensating in some degree for the loss of the services of Drs. Salomon and Parham, and encouraging to the best interests of the city.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for four weeks ending April 21st, 435 deaths, of which number 166 were among the colored people, and 99 of children under five years of age. There were 48 deaths due to zymotic diseases, and 66 to consumption. The annual death-rate was 22.68 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427 : James F. McShane, M.D., Commissioner, reports for March that the total deaths were 759, a decrease of 94 compared with the corresponding month of March, 1893. Of these, 575 were whites and 184 colored, a death-rate of 17.96 per 1000 for the former and 31.09 per 1000 for the latter. The death-rate per 1000 for the whole population was 20.01. Thirty-six died from infectious diseases. 91 from consumption, 91 from pneumonia, 28 from bronchitis, 18 from influenza, 6 from typhoid-fever, and 22 from Bright's disease. Two hundred and seventy-two, or 35.83 per cent of the total deaths, were in children under five years of age.

During the month 153 cases of infectious diseases were reported, a decrease of 6 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.

The State Board of Health has issued a circular on the prevention of consumption in which it suggests that much good might be done if local boards of health would issue a simple notice like the following :

" Consumption is the most destructive disease of New England, the number of persons dying annually from this cause in Massachusetts amounting to nearly six thousand.

" The disease is infectious, and can be communicated from

one person to another. The chief danger exists in the expectoration of the sick, and if this expectoration is carefully destroyed little danger need be feared.

"Consumptives should be instructed not to spit upon the floors of rooms, public halls, street and railway cars, and other vehicles, nor in the streets, but into pieces of cloth, or receptacles made for the purpose, containing water, or a saturated solution of carbolic acid (one part of carbolic acid crystals to about fifteen parts of water). Such bits of cloth should be destroyed by fire, before the sputa becomes dry, and other receptacles should be cleansed with scalding water, their contents having been destroyed or otherwise carefully disposed of. Handkerchiefs which may have been used from necessity should be boiled half an hour before washing.

"A healthy person should not sleep in the same room with a consumptive.

"Remember that sputa must never be allowed to become dry."

Boston, 487,397 : S. H. Durgin, M.D., Chairman.

There were 982 deaths reported in March, of which number 333 were under five years of age. The annual death-rate per 1000 was 24.17. There were 121 deaths from zymotic diseases, and 142 from consumption.

Lowell, said Dr. J. Arthur Gage, at a recent meeting of the Middlesex Medical Society, with reference to the water supply, "has had the highest percentage of deaths from typhoid-fever of any city in the world." And the city "would be desolated through its water supply should cholera ever make its appearance in Concord or Manchester, and sand filtration was not in use.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of April, 1894, compared with the preceding month, the prevailing direction of the wind was northeast (instead of westerly), the velocity was 4 miles per hour less, the temperature was 7.29° higher, the rainfall at Lansing was 2.05 inches more, the absolute humidity was more, the relative humidity was less, the day and the night ozone were less, and the depth of water in the well at Lansing was the same.

For the month of April, 1894, compared with the preced-

ing month, measles and diarrhœa increased, and inflammation of kidney decreased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886–93, the prevailing direction of the wind was northeast (instead of westerly), the velocity was 1.2 miles per hour less, the temperature was 1.48° higher, the rainfall at Lansing was .95 of an inch more, the absolute and the relative humidity were more, the day and the night ozone were less, and the depth of water in the well at Lansing was two inches less in April, 1894.

Compared with the average for corresponding months in the eight years 1886–93, scarlet-fever was more prevalent, and intermittent-fever, erysipelas, and remittent-fever were less prevalent in April, 1894.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of April, 1894, at two hundred and twenty places; scarlet-fever, ninety-eight places; measles, seventy-five places; diphtheria, sixty-one places; typhoid-fever, thirty-two places, and small-pox at six places.

Reports from all sources show scarlet-fever reported at two places less; diphtheria at one place less; measles at thirty-eight places more; typhoid-fever at five places more, and small-pox at two places more in the month of April, 1894, than in the preceding month.

Detroit, 275,000: Duncan McLeod, M.D., Commissioner. There were 333 deaths reported during March, of which number 120 were under five years of age. The annual death-rate per 1000 was 14.26. There were 36 deaths from zymotic diseases and 30 from consumption.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing.

Minneapolis.—At a monthly meeting of the Woman's Improvement League, April 30th, it was stated that out of 38,000 houses in Minneapolis, only 4500 were supplied with sewer and water connections, while 8000 had water connections only. Dr. E. S. Kelly, of the Health Department, read a paper describing the objectionable methods of collecting and disposing of garbage, and referred to the city parks as pestilential places by lack of any system for the maintenance of the purity of the soil.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

St. Louis, 540,800: George Homan, M.D., Commissioner. There were 766 deaths recorded during March, of which 282 were of children under five years of age. There were 79 deaths from zymotic diseases, and 89 from consumption. The annual death-rate per 1000 was 17.0.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

Omaha, 140,452: Report for the month of April: Deaths, 80, of which 18 were of infants under one year. Communicable diseases reported, 81, from which there were 11 deaths. Death-rate, 6.9.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—Ezra M. Hunt, M.D., Secretary, Trenton.

Jersey City.—Horrible Condition of Affairs in a City Cemetery. Rotting coffins exposed, graves so shallow that one passing there in the night might step in upon a body, flies and insects swarming about the open burial places, is the condition of affairs accidentally found by the police and investigated later by the health authorities in a section of the Catholic Cemetery on West Side Avenue—the section in which are buried those whose families were too poor to buy lots. The place is shamefully kept. The soil is light and sandy, and in many places has drifted deep, no apparent care having been taken to prevent the exposure of the graves.

Paterson, 95,262: J. L. Leal, M.D., Health Officer, reports for March 158 deaths, 66 of which were under five years of age. The annual death-rate per 1000 was 19.8. There were 21 deaths from zymotic diseases, and 20 from consumption.

Typhoid-fever at Montclair has been the subject of contention. April 5th the local Board of Health announced that a case of typhoid-fever was reported in a milkman's family *about four weeks before*, and that an inspector of the Board reported the same to the Dairy Commissioner. The commis-

sioner visited the farm, but "did not deem it necessary that the milk should be quarantined." No other action by the Board appears to have been taken until a week subsequently —the milk from the farm being widely distributed meantime, until there were reported "about forty cases of typhoid," all of which could be "traced directly to this source."

Why the Board of Health neglected to stop the distribution of the poisonous milk *immediately* after the first case was traced to it, instead of waiting until after about forty cases had been reported, is not explained.

NEW YORK.—Lewis Balch, M.D., Secretary, Albany.

There was an average daily mortality of 329 in March, against 336 in February, 353 in January, and 342 in December, or 344 for the three months preceding. During the same period there were 76 deaths daily from acute respiratory diseases, while in March there were but 60, which is not far from the normal average, showing that the epidemic of *la grippe*, which began in December, has, as suggested in the last *Bulletin*, practically ceased; a considerable number of deaths have been reported from this cause, but it is probable that not more than 250 were due to it, making the mortality from this epidemic 2950, or much less than that of any that precedes it. The proportion of deaths in early life, and also of deaths from common infectious diseases, is higher than last month. Typhoid-fever has a considerable increase because of a large mortality from it in Buffalo. Scarlet-fever shows a low death-rate, though larger than in February; its prevalence in remarkably mild form is reported mainly in the eastern part of the State. Measles caused more deaths than in the preceding month, but it is still confined almost wholly to the maritime district. Diphtheria is not generally prevalent, and most of its mortality comes from the metropolis. There were 47 deaths from small-pox, of which 5 occurred outside of the maritime district—viz., 1 in Red Hook, 2 in Coxsackie, 1 in Binghamton, and 1 in Ontario, Wayne County. It has ceased to exist in the vicinity of the last-mentioned place except at Lyons, where it developed in the person of a tramp; during the month it has been reported from Schenectady, where 4 cases developed in the jail; from Syracuse a case originating

in the Schenectady jail; from Mechanicville, 2 cases, the origin of which is doubtful; from Albany, 1 case, coming from the vicinity of Red Hook, reported on in the last *Bulletin*, and from New Baltimore, 1 case, having the same origin; there have been 7 cases altogether in the Sing Sing prison. Outside of the maritime district there are no other cases in the State, save at Binghamton and Coxsackie cases continue in the same family, each reported last month. The weather during March was unusually mild, with an average temperature 8° above the normal; the precipitation was below the average.

At the annual meeting of the State Board of Health, May 3d, Dr. Florence O'Donohue was re-elected president. Dr. Balch, of Albany, secretary, resigned, to take effect June 1st, and Dr. J. S. Barnes, of Watkins, was elected to succeed him.

New York, 1,925,569: Total deaths, 3698—1589 under five years. Death-rate, 22.60. Zymotic diseases per 1000 deaths from all causes, 170.85. Deaths from consumption, 438.

Brooklyn, 1,003,781: Total deaths, 1584—588 under five years. Death-rate, 18.65. Zymotic diseases per 1000 deaths from all causes, 159.00. Deaths from consumption, 171.

Syracuse, 91,944: Total deaths, 121—31 under five years. Death-rate, 15.80. Zymotic diseases per 1000 deaths from all causes, 115.70. From consumption, 18.

Albany, 98,000: Total deaths, 211—62 under five years. Death-rate, 23.00. Zymotic diseases per 1000 deaths from all causes, 180.10. From consumption, 36.

Report of the Committee on Hygiene, County Medical Society, for the year 1893:

Of the 3500 deaths in the entire county, 16 were from cerebro-spinal-fever, 23 from whooping-cough, 105 from scarlet-fever, 97 from diphtheria, 96 from typhoid-fever, 227 from diarrhœa, and 360 from consumption.

Albany, with 2140 deaths, had a death-rate of 21.85 per 1000 population.

Typhoid-fever has been everywhere mild, but we continue in this vicinity to show the same unvarying mortality from it. Not in the rural part of the county, for there only 2 deaths out of 305 from all causes were from this disease, a rate of 9 deaths to 100,000 population. But in Albany, in

this year of generally mild prevalence, there were 59 deaths to 100,000 population.

Buffalo, 300,000: Total deaths, 441—129 under five years. Death-rate, 17.65. Zymotic diseases per 1000 deaths from all causes, 211.40. From consumption, 52.

Rochester, 150,000: Total deaths, 170—35 under five years. Death-rate, 14.00. Zymotic diseases per 1000 deaths from all causes, 94.00. From consumption, 27.

Hoosac Falls.—The village Board of Health has recently determined that hereafter, instead of dividing the responsibility between the head of the family and the attending physician of reporting infectious diseases to the Health Officer, the physician alone will be held responsible for failure to report in the time prescribed by law. The clerk was instructed to notify the Board of Education that all pupils not having a certificate of vaccination signed within the last five years must present certificates of revaccination.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the North Carolina Board of Health we find that during March there were 172 deaths in 28 towns, aggregating 145,154 population; 102 were of colored people, and 40 were of children under five years of age.

The annual death-rates were 9.7 per 1000 for the white population, 20.7 for the colored population, and 15.2 for the total. There were 32 deaths from consumption, 2 from typhoid-fever, 12 from pneumonia, and 5 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 14. Annual death-rate, 14.0 per 1000.

Charlotte, 14,000: Total deaths, 28. Annual death-rate, 24.0 per 1000.

Raleigh, 15,000: Total deaths, 11. Annual death-rate, 8.1 per 1000.

Wilmington, 22,000: Total deaths, 35. Annual death-rate, 19.1 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

The *Monthly Sanitary Record* furnished the following report for the month of February: Forty-seven cities and towns, having an aggregate population of 1,218,815, returned 1609 deaths, of which number 461 were under five years of age. The annual death-rate was 14.82 per 1000. Zymotic diseases caused 277 deaths, and consumption, 181.

Eighty-four villages, with an aggregate population of 164,312, returned 253 deaths, of which number 39 were under five years of age. The annual death-rate was 18.37 per 1000. Zymotic diseases caused 44 deaths, and consumption, 31.

Instruction in Preventive Medicine Required.—At a meeting of the Ohio State Board of Health, held April 24th, 1894, the following resolution was adopted:

Whereas, It is highly desirable in the interest of the public health that health officers shall be properly qualified for the responsible duties of their position, and

Whereas, Physicians are usually selected for health officers; therefore, be it

Resolved, By the Ohio State Board of Health, that medical examining and licensing boards of the various States be respectfully urged to provide, where permissible, that medical colleges, to be considered in good standing, shall devote not less than forty hours to the teaching of hygiene, and require an examination in that branch of medical education.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

Small-pox reported to date (May 17th) since 1st ultimo: Philadelphia, 5 cases; Harrisburg, 2; Blandon, 4; Walnuttown, 1; Lidel's Crossing, 1; Hyde Park, 2; West Hemfield, 1; Deny Township, 3; Lewistown, 3; Dorranceton, 1; Danville, 6; Lee, 16; Shickshinny, 7; Muncy, 1; Jersey Town, 1; Reading, 4; Lewisburg, 1.

Philadelphia, 1,139,457: M. Veale, Health Officer, reports: In the four weeks ending April 28th there were 1679 deaths, of which number 530 were under five years of age. Annual

death-rate, 19.15 per 1000. Deaths from consumption numbered 233, and from zymotic diseases, 207.

The Board of Health has directed the Chief Inspector of Nuisances to institute a sanitary house-to-house inspection.

Pittsburg, 264,000: J. Guy McCandless, M.D., Registrar, reports: During the four weeks ending April 28th there were 319 deaths, of which 133 were under five years of age. Annual death-rate, 15.24 per 1000. Zymotic diseases caused 50 deaths, and consumption, 36.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—J. T. Reeve, M.D., Appleton.

Milwaukee, 265,000: Dr. Walter Kempster has been appointed Health Commissioner to succeed Dr. U. O. B. Wingate—appointed Secretary of the State Board to succeed Dr. Reeve.

The 379 deaths during the month represent a death-rate of 17.16, against 15.17 for the preceding month, and against 15.36 for the corresponding month of 1893. There were 40 cases of diphtheria with 10 deaths, against 37 cases and 10 deaths for the previous month, and against 40 cases and 14 deaths for the corresponding month of 1893. There were 16 cases of typhoid-fever with 5 deaths, against 29 cases and 8 deaths for the preceding month. Total deaths from zymotic diseases, 76, and from consumption, 34.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

Annual Report for 1892: Population, 224,816; mortality from all causes, 5121—under five years of age, 2441; deaths from phthisis, 532; diarrhœal diseases, 711; diphtheria, 54; typhoid-fever, 50.

Contagious diseases and defects found in infected houses:

Diseases.	Drain pipes.	Soil pipes from water-closets.	Privies connected with sewers.	Waste pipes from sinks.	Hidden defects.	Damp walls.	Could not be examined.	Water in cellar.	Yards and dependencies dirty.	Water-closets in bad order.	Privies causing nuisance.	False Addresses.	Total.
Diphtheria and Croup	53	3	..	27	118	....	21	4	3	5	7	2	243
Scarlatina	42	5	....	28	152	....	14	....	2	8	4	2	257
Typhoid	36	12	1	15	67	....	9	5	1	8	2	5	161
Measles	24	..	....	8	122	....	7	8	1	12	....	9	191
Varicella	10	..	....	....	8	...	...	1	...	....	....	....	19
Total	165	20	1	78	467	....	51	18	7	33	13	18	871

BUENOS AYRES, 580,371: Albert B. Martinez, Director-General of Municipal Statistics.

During the month of January there were reported 1337 deaths, of which 746 were under five years of age. The annual death-rate per 1000 was 27.0. From epidemic diseases there were 117 deaths, and from consumption, 105.

MORTALITY FROM TUBERCULOSIS.—M. Lagneau, from a comparison of many European statistics (*Revue Scientifique*), has tabulated these results:

1. That the occupations which expose the person to *dust*, whatever they are, predispose to tuberculosis to a remarkable degree—*e.g.*, according to Swiss statistics, 10 per cent of stone-cutters die of it.

2. Those who follow sedentary occupations are more dis-

posed to tuberculosis than others. According to English and Italian statistics, of students and young clergymen, 459 in 1000 die of tuberculosis.

3. Printers in England and lithographers in Italy to the number of 300 to 400 in 1000 die of it.

4. On the other hand, people who live in the open air have almost entire immunity from the disease; this is the case with shepherds, farmers, and boatmen; only one or two in 1000 having it, according to Swiss records.

M. Lagneau has also examined the subject with reference to the effect of habitat and density of population.

In France, sanitary statistics in regard to 662 cities show that the more the population is crowded, the more seriously are they attacked by tuberculosis. In 95 towns of less than 5000 inhabitants, only 181 in 1000 die from pulmonary affections; 33 towns with from 5000 to 10,000 people lose 216 in 1000; 127 towns with 10,000 to 20,000, 271 in 1000; 50 towns with 20,000 to 30,000, 288 in 1000; 11 towns with 100,000 to 430,000, 363 in 1000; Paris with its 2,424,705, 490 in 1000.

The progression is regular and needs no commentary; but it is a question if contagion, increased as its dangers are in crowded localities, is not sufficient to account for the statistics. Contagion as the first cause, aggravated by the profession and the habitat as accessory causes. These seem to be the summing up of science upon the subject.

IMMIGRATION STATISTICS.—From the Annual Report of the Chief of the Bureau of Statistics, Treasury Department, we extract:

"Immigrants arrived in the United States during the year ending June 30th, 1893, 502,917; emigrants died on the voyage, 359—7.13 per 10,000 of the whole number of departures. Arrived at the port of New York, 404,337; 293 died on the voyage hither—11 more per 10,000 than of the whole number."

VACCINATION IN THE JAPANESE NAVY.—The annual report of the health of the Imperial Japanese Navy for the twenty-fifth year of Meiji (1892), just published, gives some interesting details as to the success or failure of over 5000 cases of vaccination.

Of the vaccinations for the first time, 38 were successful and 65 unsuccessful (36.89 and 63.11 per cent); of the cases vaccinated for the second time, 220 were successful and 457 failed (32.50 and 67.50 per cent); of third vaccinations, 404 succeeded and 973 failed (29.34 and 70.66 per cent); of fourth vaccinations, 386 took and 854 failed (31.13 and 68.87 per cent); of fifth vaccinations, 195 were successes and 562 failures (25.76 and 74.24 per cent); of those vaccinated for the sixth time or over, 141 were successful and 498 unsuccessful (22.07 and 77.93 per cent). In cases in which there was an uncertainty as to scars from small-pox, 119 vaccinations took and 193 failed. In all there were 1503 successes and 3602 failures, a percentage of 29.44 and 70.56 respectively.

The ratio of success or failure per 100 cases of vaccination during the period of nine years from 1883-91 was 38.98 and 61.02 for all cases; the ratios for the various classes of first, second, third, etc., vaccination being 58.68 and 41.32, 46.80 and 53.20, 35.57 and 64.43, 32.36 and 67.34, 28.25 and 71.75, 26.83 and 73.17.

This last series particularly shows that while the chance of successful vaccination steadily diminishes with each repetition—namely, from 58 to 26, there is still more than one chance in four that even a sixth vaccination will take—a fact which should emphasize the importance of a general revaccination of persons of all ages at the time of any public need.

STATISTICS OF CONJUGAL LIFE.—A census bulletin just issued gives the first data in conjugal life in the United States ever gathered by the Government. It shows that of a total population of 62,662,250 in 1890 almost three fifths were single, a little more than one third married, and not quite one twentieth were widowed. The divorces constituted a small fraction of 1 per cent. The actual numbers of the classes are as follows:

Single, 37,129,564; married, 22,331,424; widowed, 2,970,052; divorced, 120,996; unknown, 70,214. The males constitute over 51 per cent of the total population. Of 32,067,880 males in the country 19,945,576 were single, 11,205,228 married, 815,437 widowed, and 49,110 divorced. Of the females 17,183,988 were single, 11,126,196 married, 2,154,615 wid-

owed, and 71,895 divorced. The proportion of widows, says the report, was nearly three times as great as of widowers, indicating that a greater portion of widowers remarried than widows, while figures show that divorced men have remarried to a greater extent than divorced women. Of the married males there were 23 out of 11,290,008 under 15 years of age, 585,748 out of 3,104,893 between 20 and 24 years, 1,628,930 out of 2,425,664 between 30 and 34 years, and 869,925 out of 1,233,719 65 years and over. Of married females there were 1411 out of 10,952,192 under 15 years, 313,983 out of 3,308,852 from 15 to 19 years, 1,444,712 out of 3,091,783 from 20 to 24 years, 1,805,084 out of 2,520,466 from 25 to 29 years, 1,717,204 out of 2,152,966 from 30 to 34 years, 2,293,266 out of 3,346,030 from 35 to 44 years, 1,796,979 out of 2,430,878 from 45 to 54 years, 905,627 out of 1,499,997 from 55 to 64 years, and 418,399 out of 1,183,569 65 years and over.

SOME AMBIGUOUS REPORTS.

He kissed her passionately upon her *reappearance* (*Jefferson Souvenir*).

She whipped him upon his *return* (*Hawkeye*).

He kissed her *back* (*Constitution*).

She seated herself upon his *entering* (*Albia Democrat*).

We thought she sat down upon her *being asked* (*Saturday Gossip*).

She fainted upon his *departure* (*Lyin Union*).

He kicked the tramp upon his *sitting down* (*American Pharmacist*).

We feel compelled to refer again to the poor woman who was shot in the *oil regions* some time ago (*The Medical World*).

And why not drop a tear for the man who was fatally stabbed in the rotunda, and for him who was kicked on the highway? For all the above we are indebted to the *Medical Age*, but it fails to mention the fact of the woman being accidentally shot in the water-works, or the man injured upon the long bridge. —*California Medical Journal.*

MEDICAL EXCERPT.

By T. P. CORBALLY, A.M., M.D.

MEDICAL ANTISEPSIS.—M. Petresco, of Bucharest, made to the Eleventh International Medical Congress, recently held at Rome, the following interesting report (*La France Médicale*) on medical antisepsis in general:

"Since 1857," he said, "I have undertaken, at the Central Military Hospital of Bucharest, a series of clinical researches into the antiseptic action of many medicinal substances.

"I have applied medical antisepsis *intus et extra* on a large scale.

"I have used antiseptics locally or on the surface—cutaneous, pulmonary, and intestinal; and antiseptics generally, in different parasitic, contagious, or infectious diseases more or less confirmed.

"1. As antiseptics, primarily of the digestive tube, and secondarily of the internal organs, I have used the following substances:

"Calomel, the bichloride of mercury, the benzoate of sodium, the salicylate of sodium, the salicylate of bismuth, the perchloride of iron, the sulphate of carbon, iodoform, the sulphate of quinine, antipyrin, kairine, the flowers of sulphur, gaïacol, eucalyptol, the essence of turpentine, creosote, naphthol β, salol and boric, phenic, salicylic, gallic, tannic, acetic, citric, tartaric and hydrochloric acids.

"2. As cutaneous antiseptics, I have employed, for local application under different pharmaceutical forms, the following medicinal agents:

"Boric, salicylic, anhydrous, acetic, phenic acids, the white precipitate of mercury, Van Swieten's solution, the liquid perchloride of iron, iodoform, salol, aristol, the carbonate of potassium, the biborate of sodium, the solution of bleminxck, naphthol β, and sulphur.

"3. As pulmonary antiseptics, in inhalations, I have employed, with the use of a special inhaler, which was made for

me by P. Rousseau, of Paris, and Rohrbeck, of Berlin, vapors of a great number of medicinal substances, more or less volatile, at the ordinary temperature or above it.

" It was with these same substances, either alone or united with others, that I made a series of experiments in the laboratory of microbiology, belonging to the sanitary service of the Roumanian army, on the two well-known bacilli—the bacillus of typhoid-fever and the bacillus of tuberculosis—and also on the great number of microbes, whether harmful or not, that swarm constantly in the air that surrounds us.

" From the results obtained, both in clinical practice and in the laboratory, with more or less active medicinal agents, as microbicides or as antidotes for poisons—*detoxinisants*—I think I may draw the following conclusions :

" 1. That we obtain an antiseptic effect either local, medical, or general, at a distance on the histological elements and on the pathogenic germs or on their poisonous agents—*toxines* —analogous to the local surgical antisepsis.

" 2. That there are many chemical substances, fixed or volatile, which, after absorption, exert at a distance an attenuating action, and even act as microbicides on certain pathogenic micro-organisms."

A Hysterical Paroxysm Resembling Trifacial Neuralgia.—M. Gilles de la Tourette presented the following report (*La France Médicale*) to the Société Médicale des Hôpitaux, at the session held March 2d last :

" Hysteria must now be considered as a disease consisting of a number of permanent stigmata : disturbance of vaso-motor sensation, affections peculiar to the nervous diathesis, causing contractions, amyosthenia, etc., forming a common basis on which the paroxysms are evolved.

" The oldest and the best-known form of these paroxysms is the usual convulsive attack. It has heretofore overshadowed all the others, because it was recognized that the convulsive attacks were frequently associated with different forms of paroxysmal manifestations ; but this association of symptoms has been of great injury to medical nosography.

" In 1891 I was enabled to separate from the large group the class known as facial neuralgias, and to attribute to hys-

teria certain paroxysms, until then confounded with tic douloureux. It is a case of this kind to which I now wish to call the attention of the society.

" The case is that of a journeyman tiler, fifty-four years of age, who, in thirty-eight years, during three attacks, has had seizures of this kind, with complete loss of consciousness, biting his tongue, which very much resembled an attack of epilepsy, or of hysterical apoplexy, as described by MM. Debove and Achard.

" Well, about three weeks ago, this man, who is hemianæsthetic on the right side, was seized, without known cause, with a severe sciatic pain, located in the same right side.

" This special case would suggest the idea that hysteria was the origin of sciatic neuralgia, but that is not all. Concurrent with the sciatica, and always on the right side, a tic douloureux was developed which had the characteristics of a permanent and of a paroxysmal attack. The paroxysms have a tendency quite peculiar; they are preceded by the usual aura, and their termination often coincides with the emission of an abundance of clear urine. These are the true characteristics of an attack of hysterical neuralgia.

" But what argues still more strongly in favor of a neurosis is the fact that all the right side of the face and of the scalp on the same side are the seat of an extreme hyperæsthesia. There cannot be the least doubt that the permanent pain was due, like the hysterical attack, to the existence of a zone of hyperæsthesia, and that the paroxysms, whether depending on the increase of this zone of hyperæsthesia or on other cause, becomes the cause of the hysterical attack.

" It may also be added that the patient has a collection of permanent stigmata which, apart from all other phenomena, would make him a confirmed subject of hysteria."

M. Féré said that there was no good reason for refusing to admit of a facial neuralgia having the nature of hysteria. Neuralgia is a symptom which may be manifested under a great variety of conditions. Trausseau had some reservations regarding the nature of neuralgia which he called epileptiform; but facial neuralgia, characterized by sudden seizures, may be found in true epileptics, and be relieved, as convulsive troubles, by the bromides.

EUROPHEN IN DISEASES OF THE NOSE AND THROAT.—Europhen has been extensively employed in diseases of the nose and throat during the past two years, and the results obtained from its use have been very favorable. Dr. Chappell (*Medical Record*) obtained remarkably good results from its use in fœtid rhinitis, the powder being insufflated in the morning, and an ointment (two grammes to the ounce) applied inside the nostrils with a camel's-hair brush. He also found it useful after operations in the throat and nose, and in atrophic rhinitis, where the introduction of a europhen ointment into the nose at night kept the mucus from getting dry and hard, and exerted a stimulant and disinfectant influence. Dr. Bresgen (*Wien. Medizin. Wochenschr.*) speaks favorably of europhen among other remedies for preventing inflammations after intra-nasal operations. Dr. Werthheimer (*Arch. f. Klin. Medic.*) has derived marked benefit from the remedy in cases of hemorrhages due to erosions of the septum, atrophic nasal catarrh, but especially in the local treatment of syphilitic ulcers of the nose, lips, and angles of the mouth, where in the form of ointments it acted more effectively than iodoform or other remedies. Dr. Lievin (*Deut. Medic. Wochenschr.*) has made extensive use of europhen after intra-nasal operations, where it proved an excellent antiseptic. Insufflations of the powder in cases of rhinitis hypersecretoria in children gave excellent results, while in atrophic rhinitis the insertion of tampons anointed with a ten per cent ointment, which were allowed to remain for half an hour, afforded decided relief. It will be observed that europhen has a pronounced alterative effect upon the morbid secretions in nasal affections, acting as a stimulant in the atrophic forms and arresting and disinfecting the excessive secretions in fœtid rhinitis.

LOSOPHAN.—The following description of this remedy occurs in the seventeenth edition of the "United States Dispensatory," which has just been published: "Losophan:—Tri-iodo-meta-cresol, $C_6HI_2(OH)(CH_3)$. Contains 78.39 per cent iodine, and is prepared by the action of iodine upon m-oxy-toluic acid in the presence of a definite quantity of alkali in the same manner that tri-iodo-phenol may be obtained from salicylic acid. It crystallizes in white needles, melting at

121.5° C., soluble with difficulty in alcohol, but readily in ether, benzine, and chloroform. Losophan has been recommended by Dr. Saalfeld in skin diseases produced by parasitic growth, as well as in chronic eczema, prurigo, and other similar affections, when there is no pronounced inflammatory condition. It may be employed either as a one or two per cent solution in three parts alcohol and one part water, or as a one to ten per cent ointment with vaseline, or four parts lanolin and one part vaseline."

IVY POISONING will soon be seasonable; and while it is well for people who resort to the country during the summer to be careful while they pick wild flowers, it may be of use to them to know that, according to a series of cases recently reported by J. Abbott Cantrell, M.D. (*Philadelphia Polyclinic*, May 12th), Labarraque's solution (solution of chlorinated soda) is an excellent remedy. It should be applied in full strength by means of a pledget of lint or of diaper cloth, kept constantly wet with the liquid. It will effect a cure in from three to five days.

FOR THE TREATMENT OF COSTIVENESS AND CONSTIPATION, *Villacabras* water is the most efficient and agreeable remedy with which we are acquainted. The distinctive features of its superiority to other aperient and purgative mineral waters are its extraordinary concentration and consequent smallness of dose; its entire destitution of odor and repulsive bitterness common to other purgative waters, and its agreeable and wholly painless effects. Its principal ingredient is sulphate of soda, 122.0500 grammes per litre. For adults, the dose is from one ounce to four ounces, as necessity may require, for the relief of habitual costiveness or for constipation; for children, from two drams to an ounce; and if diluted with warm milk it is almost tasteless. Its action is promoted by thus diluting it with warm milk, or with warm water, or weak tea, or by a draught of either immediately after taking it. Its particularly agreeable effects, as compared with other aperient mineral waters or other aperients of any kind, are that constipation does not follow its use.

EDITOR'S TABLE.

SANITARIAN, JUNE NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

NATIONAL SANITATION is still pending the action of Congress; and Congress, apparently, the report of the House Committee on Interstate and Foreign Commerce. Meanwhile commerce in disease continues. But just at the time of this writing (May 18th) the Committee is reported to have given its last public hearing on the several proposed measures before reporting a bill. The chief contestants, at this last hearing, appear to have been Dr. Girdner, the representative of the New York Academy of Medicine, urging the latest revision of the Bureau bill; and Surgeon-General Wyman, of the Marine Hospital Service, contending for the sufficiency of the national quarantine law as it now obtains. It must be conceded that, as between the uncertainty of the Academy's mind, as shown by its activity a year ago in securing the limited legislation which it is now endeavoring to supersede, but which Dr. Wyman considers sufficient, and its recent vacillations from Board to Bureau, and from the Treasury Department to the Department of the Interior, have not been such as to inspire confidence in the maturity of its judgment on sanitary requirements as compared with Dr. Wyman's practical knowledge. Notwithstanding, the Academy's ambition to lead and the energy of its representative have materially contributed to public knowledge of the subject and to intensify the demand for legislation.

Every medical society of consequence, the medical and the popular press alike, and many commercial bodies, urge the necessity of a national health service—a service that shall not be limited, as the present quarantine law is, to contend against exotic disease only, the danger of and mortality from which are as nothing compared with the devastations of preventable diseases of domestic origin. That the Committee on Interstate and Foreign Commerce appreciates the necessity of such a law is beyond question. And, considering the pains the committee has taken to familiarize itself with the require-

ments of such a law, it seems reasonable to expect that it will evolve a bill better than either one of those that has been proposed; though there is surely no true votary of preventive medicine in the country who would not rather that either one of the three bills that has been proposed should be enacted than that neither should be.

THE STIFLING CONDITION OF THE HOUSE OF REPRESENTATIVES, recently reported, should serve to stimulate attention to national sanitation generally.

The report showed that 400,000 cubic feet of impure air comes up the main floor from the cellar every hour, and that the good air that is forced through to the main floor of the House passes between gratings that are practically cuspidors and receptacles for bits of paper and other cast-off matter. Moreover there are a large number of documents on the lower floor, many of which are in a state of decay, and the carpets of the House floor are saturated with filth and tobacco juice, and need cleaning.

TO CHECK TUBERCULAR CONSUMPTION, the Health Department of New York City has issued a circular of information addressed to physicians, earnestly soliciting their cooperation in a determined effort to restrict the ravages of the most prevalent and formidable disease, consumption, with which mankind has to deal. Among other points, the circular announces that in all cases where it comes to the knowledge of the Department that premises which have been occupied by a consumptive have been vacated, the Board will attend to their proper disinfection. The circular next lays stress on the vital importance of positive diagnosis at the earliest possible moment. In aid of this object, the Board is prepared to undertake the bacterial examination of the sputa of patients. That the importance of prompt diagnosis is really vital is apparent without argument. The precautions essential to the protection of the living can then be taken before the fatal seeds are sown in new soils.

Experiments have been undertaken to ascertain the danger of human beings from using milk from cows infected with tuberculosis. These experiments are deemed to be of great

importance. It is held by many physicians and bacteriologists that tuberculosis is transmitted through infected cows' milk, even more freely than through the meat of the cows when slaughtered.

SMALL-POX persists in New York, Brooklyn, and Chicago, and, as may be seen under the head of Mortality and Morbility Statistics, it is cropping out in numerous and widely distant places from one end of the country to the other; yet the contention with it by the sanitary authorities is so vigorous there is reason to think that it will be effectually crushed before the return of winter—its most favorable season.

The number of cases reported in New York during the four weeks ending May 12th was seventy-five—ten less than during the preceding four weeks

In Brooklyn, for the four weeks ending May 19th, the number of cases reported was fifty-two—*fifty-five less* than for the preceding four weeks. But the Health Department has encountered a surprising set-back to its effort to stamp out the disease by the decision of Judge Gaynor against its right to quarantine expressmen or other persons carrying packages and freely circulating among people in infected districts—whithersoever they please—who refuse to be vaccinated. Quoting the law, the judge says:

"Chapter 661 of the laws of 1893 (Section 24) empowers all health boards to require the isolation of all persons and things infected with or exposed to contagious or infectious disease. There is no claim that the petitioners are infected or have been actually exposed to infection. But even if they were subjects for isolation by reason of infection or exposure thereto, they could only be detained while such, and not indefinitely until they yielded their bodies to vaccination. The same act directs health boards to provide vaccine virus, 'and at all times provide thorough and safe vaccination for all persons in need of the same.' This falls far short of authorizing the imprisonment of those who refuse to be vaccinated. Life, liberty and property are inviolable except as effected by express law and due process of law. Arbitrary power is abhorrent to our system of government."

But still *more abhorrent* it certainly is, to allow an expressman or any other person the liberty to *poison and kill his neighbor*

with a loathsome disease! Ay, more; that such expressman or any other person or persons should be permitted to jeopardize the health and well-being of thousands of people rather than yield to an operation so trivial as vaccination, is, to say the least, a kind of liberty which challenges the first law of nature.

Health Commissioner Emery has declared his intention to appeal the issue to a higher court. It is to be hoped, at any rate, that if the law is as explained by Judge Gaynor it may soon be amended. Of about three hundred thousand persons vaccinated in Brooklyn during the last four months, the anti-vaccinists have alleged one death to have resulted from the operation and demanded a post-mortem examination. The death occurred two weeks subsequent to the operation, and the verdict of the coroner's jury was death from rheumatism.

Of the epidemic in Chicago, our latest official report is for the month of March, during which there were 305 cases with 100 deaths, being an average of a little less than 10 per day. In February there were 233 cases—an average of a little less than 9 per day; in January, 189 cases—an average of about 6 per day. This shows a gradual increase from month to month, making a total of 627. This number of cases includes those received from the drainage canal, from other places outside the city, and even from beyond the State.

The first three months of the year 1882, when our population was less than one third what it is at present, there were 2485 cases. Forty-two thousand vaccine points were used during the month—a total since December 1st, 1893, of 226,400. There is still a great number of unvaccinated people in the city. A house-to-house inspection has been in operation for the past two weeks by the police. So far they have not detected any small-pox not already known, yet the inspection has demonstrated that the physicians of the city report with great fidelity scarlet-fever and diphtheria. So far the small-pox has been confined to people who through necessity are obliged to live in too closely crowded and improperly ventilated quarters.

At a conference of the Health Commissioner with other health authorities (May 9th–10th) resolutions were adopted, imposing restrictions on clothing and other merchandise from

Chicago, districting the city under vigilant inspectors, urging the immediate vaccination of all persons known to have been exposed to small-pox, and thorough disinfection of all things and places that have been used or occupied by persons affected with the disease. The conclusion was, that with the rigid enforcement of these propositions by the sanitary authorities of Chicago there would be no need of quarantine against that city by other communities.

AN IMPORTANT PRECEDENT IN SANITARY JURISPRUDENCE was established by the Superior Court of Connecticut April 17th—that the officers or employés of boards of health are justified in removing persons suffering with contagious diseases to pest-houses, and in destroying any personal property that may be infected by disease.

The trial occupied two weeks, and was watched with a great deal of interest by boards of health throughout the State. John Hurley, of Birmingham, sued Dickerman M. Bassett and Geroge B. Clark, ex-selectmen of the town of Derby, and Dr. Robert J. Barry, the physician who was in charge of the temporary pest-house during the small-pox epidemic in that town in 1892, for $15,000, on two accounts, the first alleging that plaintiff's sixteen-year-old son, Michael, was killed by neglect and improper treatment by the defendants, who were members and employés of the Board of Health ; and the second claiming damages for the destruction of clothing which was taken from the house when it was disinfected.

The defence simply alleged that every act was legal, and that all proper care had been exercised, but that Hurley's case was hopeless from the start, because of the severe type of the disease with which he was suffering.

Judge Prentice, in his charge, said the Derby Board of Health was legally constituted, and, under the statutes, it had the power to remove such cases to a pest-house, provided only that ordinary care should be exercised. It also had the power to destroy property, if that was regarded as necessary in eradicating the disease germs. The plaintiff was compelled to show that ordinary care was not used in treating the patients, that the removal of the boy to the pest-house was not legal, and that the act of taking away the property and destroying it was not legal.

The jury, after having been out an hour and twenty minutes, brought in a written verdict for the defendants, placing the costs of the trial upon the plaintiff.

TYPHOID-FEVER—IN MEMORIAM.—According to a newspaper report, one of Alleghany's philanthropic select councilmen proposes to present a drinking fountain to that fair city. As all well-regulated fountains should have an inscription, the Pittsburg *Medical Review* suggests the following:

"*Erected to the memory of one hundred and sixty-one citizens who drank of this water and died of typhoid-fever during the year* 1893. *This water is warranted to be drawn from the Alleghany River at a point where the discharges of eighteen sewers of Pittsburg are mingled with the stream, and each drop contains on an average two hundred bacteria.*" And adds:

"These eighteen sewers drain an area of seven thousand acres—more than two thirds of the entire territory of Pittsburg, exclusive of the South Side. Some of them pour their contents into the river a short distance above the influent pipes of the Alleghany water-works, while others are situated irregularly for five miles above, so that the entire volume of water must become contaminated by the Pittsburg sewers, not to mention the surface drain from upper Alleghany and the numerous towns along the Alleghany and its tributaries. The discharges from the West Penn Hospital patients find their way into the river at a point that is specially well adapted for transference into the Alleghany reservoir, and as many fever patients are treated there during the summer and fall months, when the stage of the water in the river is usually low, the prevalence of fever and death in Alleghany is to be expected, and the source of the infection is not difficult to trace."

POLLUTED WATER AND HOW TO PURIFY IT.—In a recent lecture at the St. Louis College of Pharmacy, City Chemist William C. Teichmann said that "the crusade against wells in St. Louis was justified. The wells were filthy and contaminated with animal excretion. A public well at Fourteenth Street and Franklin Avenue contained twenty times as much chlorides as was consistent with the quantity established by the city commission. Nitrates were also present in five times

the amount consistent with pure water. The same state of affairs was found to exist in private wells; but, in the minds of the people, clear water is pure water; hence, on account of the muddy condition of city water, people insist on drinking the polluted water from these wells after it has already been condemned as unfit for use. As regards the means of purification, he declared himself strongly in favor of sand filtration, and said it would probably be adopted by the city."

This finding is suggestive of the use of the "Hunting Automatic Distiller," of which an illustration may be seen on an advertising page.

We have been privileged to examine Dr. Hunting's distiller in use; and whatever may be said of the need of boiling suspected water before drinking it as a means of safety, may be urged with compound interest in favor of distilling it, and, withal, aerating it. Moreover, distilling water by means of this apparatus may be accomplished with as much facility as boiling, while the resultant purification is much more complete. For although a boiling temperature is well known to be fatal to disease germs, they are not commendable even when cooked.

The still is thoroughly adapted to domestic use. It is operated by connections with the water supply pipe, or otherwise supplying it with water in houses not so connected, and by placing it upon the cooking stove or range. Steam is quickly generated, and rises through an opening to the inside of the vessel. The steam then passes upward around a shield, and, coming in contact with the cooled surface of the fresh air chamber, it is there condensed and drips into a receiver *guttatim*, and so becomes thoroughly aerated as well as purified.

But the danger of using polluted water in the household is far from being limited to drinking it. However fatal boiling water may be to disease germs, the various uses of water for cooking and washing greatly multiply the danger. Hence persons may be ever so careful of the water they drink and yet swallow germs with food that has been washed or cooked in such water. The "distiller" is equal to the twofold purpose of supplying all the water needful for cooking and dish-washing, as well as for drinking.

POISONS ON FRUIT.—There has been much discussion of late concerning the danger of poisoning from eating fruit which has been sprayed with salts of copper or arsenic to destroy insects or fungi upon the plant.

It is stated that experiments have been carried on for two years at the Michigan Agricultural College with a view of finding out the truth in the matter.

The important question is, Do the poisons penetrate the skin of the fruit? The tests have shown that copper sulphate has passed into the body of the pear, though more of the solution remained upon the skin. If this peel is not a protection, what can be said of the thinner skins, like those of the plum, the cherry, berries, etc.? Dr. Kedzie, who made the analyses, says that horticulturists often use much larger quantities of the poisonous solutions than are necessary to destroy the life of the fungi; one half or even a third of the quantity generally used would be enough.

It is not safe to eat fruit which has been sprayed with any poisonous salts, for while the poison received into the system from one pound might not be harmful, if no more were taken, repeating the doses may in time result in slow poisoning.

And how are people in the cities to know whether or not their fruit has been sprayed?

THE NUISANCE OF FLIES, AND HOW TO CURE IT.—Thousands of methods have from time to time been employed to rid us of one of the most fertile carriers of disease and infection—the "house fly"—but he has defied us. Sweet-peas have been suggested; but this creeper will not grow at all seasons, and refuses to thrive in those districts where flies are most abundant. Fly papers are a boon and yet a danger, as their poisonous nature precludes their being left lying about where there are young children. A cold infusion of quassia wood treated with a trifle of molasses or treacle is not only cheap, easily procurable and harmless to human life, but it will kill these marauders by the million. It has the disadvantage of strewing the floor with their carcases.

Take this advice (*Indian Medical Record*): Expose a little *oil of bay* in a saucer on your window-sills, or coat your doors and windows with any color of paint you like containing as

little as four per cent. of *oil of bay*, which is far from expensive, and can be had anywhere, *and not a single fly will enter your house.*

"FRENCH COFFEE," as described by a recent number of a Paris journal, says *Modern Medicine*, is composed of roasted horse liver, roasted black walnut, sawdust, and caramel.

MOVEMENTS OF POPULATION AND WILD ANIMALS IN SCOTLAND.—*The Spectator* states that golden eagles and wild-cats are increasing in Scotland, owing to the extension of deer forests—a very interesting fact to zoölogists, doubtless, but how about the diminution of population? The extension of deer forests and the increase in eagles and wild-cats means a diminution of people, the removal of the cottager and the increase of vagrants. The population of Scotland is now under 5,000,000, and the vagrants in Scotland have increased within ten years from 90,000 to 150,000. On the whole, busy farmers are greatly preferable to wild-cats and tramps.

OF DIPLOMATIC SANITARY CONVENTIONS and practical facts *La Journal d'Hygiène* says:

"At a time when the great success of our official hygienic diplomacy in the sanitary conferences of Venice, Dresden, and Paris is proclaimed aloud, as if from the housetops, the measure being the unanimous adoption of all the propositions of the French delegates—relating to the sanitary police of the Suez Canal and the Persian Gulf—it seems timely to gather from foreign journals certain statements that are in strange contrast with such optimism.

"The two practical questions involved since the conference of Dresden prove, undoubtedly, that there is always a very great difference between written agreements and their practical application."

THE "CRAIG" STATE COLONY FOR EPILEPTICS, STATE OF NEW YORK.—The governor has signed the bill introduced into the Legislature by Hamilton Fish, providing for the establishment of a State colony for epileptics, which passed the Assembly by a vote of 96 to 4, and the Senate unanimously.

The colony is to be known as the Craig Colony, "in honor of the late Oscar Craig, of Rochester, whose efficient and gratuitous public services in behalf of epileptics and other dependent unfortunates the State desires to commemorate." The statute provides for the purchase by the State of the property heretofore owned by the Shakers, situated near Mount Morris, Livingston County. It includes eighteen hundred acres of land in one of the finest locations of the Genesee Valley, and the soil is well adapted for farming and horticultural purposes. The supply of water is abundant, the property being divided into two parts by the Cashauqua Creek, which flows through the land in a deep gorge, with a fall of one hundred feet, affording a perfect natural barrier for the separation of the sexes. The Shakers have erected upon the property two groups of buildings, valued at $75,000, suited to all the purposes of the contemplated colony, which, with slight alterations, will accommodate at least three hundred patients. Indigent epileptics will be received and cared for by the State, but the colony is expected, when fully established, to be nearly self-supporting. There are now more than six hundred epileptics in the poorhouses and almshouses throughout the State.

A PENSION FUND FOR EMPLOYÉS OF THE HEALTH DEPARTMENT OF THE CITY OF NEW YORK.—The governor has signed the Lawson Bill, establishing a pension fund for the physicians, nurses, clerks, and other employés of the Health Department who have served a term of twenty years, and also for the families of employés dying in the discharge of duty. The fund from which the pensions will be paid is to be made up of the fines and penalties collected for violations of the city health laws, and of the fees paid for searches of the records.

PROPOSED RECLASSIFICATION OF COMMUNICABLE DISEASES.—At the meeting of the New York Academy of Medicine, May 3d, 1894. Dr. William H. Thompson proposed that communicable diseases be divided into two classes:

The contagious communicable diseases, to include those in which simple proximity to the infected is sufficient to communicate the infection to those susceptible to them. Exam-

ples are: Typhus-fever, scarlet-fever, small-pox, measles, diphtheria, mumps, and whooping-cough. Isolation of the sick with them, therefore, is needful to prevent infection; and the

Non-contagious, those in which the communication is not by simple proximity, but through intermediate means of communication. Isolation with them is neither needful nor effective in comparison with measures provided against the intermediate means of the infection. Examples are typhoid-fever, cholera, and tuberculosis.

Asiatic cholera, he said, was easily shown to be non-contagious, because persons fell victims who were known not to be near those who had it, while those attending the sick were not so often attacked.

Referring to the absurd and cruel detention of the *Normannia* down the Bay during the cholera scare of 1892, he said "that when confronting the New York Senate Committee on Cities as a delegate from this Academy to lay these facts before that remarkable body of legislators, I found a state of mind and of intelligence in them on all questions about infectious diseases which one might expect from an equal number of Mohammedan muftis, and no more. In fact, the chairman of the committee, in reply, enunciated the old orthodox Moslem doctrine that God was Himself responsible for whatever should happen on the Croton watershed, as He sent the rain which washes things into the Croton."

THE DENISON INHALER.—We have been favored by the manufacturers, the Denver Surgical Instrument Company, with two samples of a most ingenious inhaler devised by Dr. Charles Denison, of Denver, and called by him the "air-pressure inhaler and exhaler." By a clever arrangement of passages of influx and efflux for the air breathed through it, which can be so adjusted in capacity as to restrict or facilitate the current in either one of them independently of the other, the air-pressure within the lungs can be controlled. In a little chamber through which the current of air passes one can place a small absorbent packet moistened with any liquid of which it is desired that the vapor should be inhaled. The apparatus is made of hard rubber. It is light, and of a convenient size for carrying in the pocket.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

CLINICAL DIAGNOSIS. By ALBERT ABRAMS, M.D., Professor of Pathology, Cooper Medical College; Pathologist to City and County Hospital, San Francisco; Author of "Synopsis of Morbid Renal Secretions," etc.; President of the San Francisco Chirurgical Society, 1893–94. Third Edition, Revised and Enlarged. Pp. 284. Illustrated. Price, $2.75. New York: E. B. Treat.

A particularly concise and yet comprehensive work, very thoroughly comprising the subject, divested of unnecessary detail. The illustrations consist of temperature and topographical charts; sphygmographic tracings; microscopical demonstrations of the blood, vomit, sputum, fæces, urine; physiological and pathological sections; tænia, trichina, bacteria, etc., with sufficient descriptive text to familiarize the student with the technique of diagnosis, as well as and equally necessary with that made at the bedside.

ESSENTIALS OF NERVOUS DISEASES AND INSANITY: their Symptoms and Treatment. A Manual for Students and Practitioners. By JOHN C. SHAW, M.D., Clinical Professor of Diseases of the Mind and Nervous System, Long Island College Hospital Medical School; Consulting Neurologist to St. Catherine's Hospital and Long Island College Hospital; formerly Medical Superintendent Kings County Insane Asylum, etc. Second Edition. Pp. 194. Illustrated. Price, $1. Philadelphia: W. B. Saunders.

The short period of time within which the first edition of this excellent manual has been exhausted fully justifies our high appreciation of it when it first appeared two and a half

years ago, and the favor with which it has been received by the profession. Indeed, its excellence cannot fail of being appreciated by all medical students and physicians who would get at the essentials of practical knowledge of this most important branch of medicine with the least possible labor.

ESSENTIALS OF PRACTICE OF PHARMACY. By LUCIUS E. SAYRE, Professor of Pharmacy and Materia Medica in the University of Kansas. Pp. 200. Price, $1. Philadelphia: W. B. Saunders.

Of the same series ("Saunders' Question Compends") as the immediately preceding, admirably adapted to its purpose, covers a great deal of ground, and gives the gist of the subject.

DISEASES OF THE WILL. By TH. RIBOT, Professor of Comparative and Experimental Psychology in the College of France. Authorized translation from the eighth French edition by Merwin-Marie Snell. Pp. 140. Price, 75 cents. Chicago: Open Court Publishing Co.

A companion treatise, in some respects, to "Diseases of Memory" and "Diseases of Personality," by the same author. *Free* will is eliminated from the question, because, in the words of the author, "it is imposed not by timidity, but by method. Like every other experimental science, psychology ought to rigorously forbid itself all research relative to first causes. The problem of free will is of this order." It is limited to the study of the will in its double mechanism of impulse and inhibition, and in its source—the individual character. Beginning with the very first manifestations of will power by sentient beings, the mere reflex movements of an awakening consciousness, the author describes the relations of ideas and movements during the process of healthy development, and the exercise of the will as governed by the power to act. Then follows a description of the diseases of the will: abulia, or incapacity to act, as illustrated by the effect of narcotics—deficiency of impulse; excess of impulse—impairments by intoxication, by cerebral lesion; the realm of caprices—the hysterical character, etc.; the extinction of the will—ecstasy, somnambulism, etc.; and a concluding chapter which sums

up the progressive evolution of the will, the law of its dissolution as verified by pathological facts, illustrated by examples.

CLIMATOLOGY OF NORTH CAROLINA, from records of 1820-92, a publication of the North Carolina Agricultural Experiment Station through its State Weather Service Division, is a statistical report of particular utility to the agriculturists of the State, and of special value to health-seekers who would acquire knowledge of the meteorological conditions and altitudes of some of the most inviting localities for invalids in the United States. It comprises observations at 128 stations, and a brief sketch of the physical geography of the State, together with a general sketch of the climate and, for comparison, a table of annual mean temperatures at the chief cities of the United States and at sixteen foreign cities.

TRANSACTIONS OF THE MEDICAL SOCIETY OF NORTH CAROLINA, 1893, W. H. McKee, M.D., Raleigh, Secretary. A pamphlet of 150 pages, comprising about a dozen papers and discussions thereon, of interest to all medical practitioners; and most of all, the "Remarks on the late Dr. Thomas F. Wood's Life and Character," whose monument is the sanitary service of the State. Right well it is said by one who knew him well: "In all that elevates and ennobles the human race, Dr. Thomas F. Wood was a shining light. . . . His daily life, his walk and conversation are an inspiration; his professional labors, his work in our Society and Board of Health sanctify our efforts to prevent and relieve human suffering; the remembrance of his virtues, his unobtrusive gentleness, his child-like faith, his patient endurance, even unto death, are a benediction."

It was voted to have made a life-size bust of Dr. Wood to be presented to the State Library.

The Report of Dr. S. J. Montague, Chairman of Section on State and Legal Medicine, was specially devoted to "The Physician in Relation to Courts of Justice," dwelling in particular upon the unsatisfactory standing and discreditable medical evidence of physicians in the courts in North Carolina, and citing several examples to show the need of a statute

of the same force as that which obtains in New York and nineteen other States, that "No person duly authorized to practise physic and surgery shall be allowed to disclose any information which he may have acquired in attending any patient in a professional character, and which information was necessary to enable him to prescribe for such patient as a physician or to do any act for him as a surgeon." Expert evidence and its needful limitations are also discussed, and examples cited showing the need of legislation in the premises.

The Annual Report of the Secretary of the North Carolina Board of Health was submitted, in accordance with the act requiring it at the annual meeting of this society. The report shows a gratifying evidence of co-operative support by the medical profession, promotion of sanitary service throughout the State, progress in the organization and administration in local boards, and a better appreciation of the needful support by the Legislature.

PROCEEDINGS OF THE THIRD ANNUAL MEETING OF THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, Chicago, August 8th–10th, 1893, E. Chancellor, Lieutenant-Colonel, Medical Director, St. Louis, Mo., Secretary.

The special papers and reports of this volume, besides the minutes, are: Enterorrhaphy, by Colonel Nicholas Senn; Gunshot Wounds of the Joints, by Lieutenant-Colonel H. L. Burrell; Gunshot Injuries Inflicted by the Mantle Projectiles, by Captain L. A. LaGarde; Wounds Made by Large and Small Bullets, by Major A. C. Girard; The Military Rifle, by Lieutenant G. D. DeShon; Gunshot Wounds of the Chest, by Captain Charles Adams; Gunshot Wounds of the Abdomen, by Brigadier-General J. D. Griffith; Gunshot Wounds of the Long Bones, by Major George R. Fowler; Selection and Physical Examination of the Recruit, by Captain Charles B. Swing; Medical Department of the Army, by Major Charles Smart; Observations on the Physical Examination of the Recruit, by Lieutenant Frank R. Keefer; The Tag Diagnosis in the Field, by Major V. Havard; Prevention of Cutaneous Parasitic Diseases in Soldiers, by Lieutenant

A. H. Ohmann-Dumesnil; Military Medical Problems, by Captain Charles E. Woodruff; Qualifications for and the Status of a Medical Officer in the National Guard, by Major L. C. Carr; The Medico-Legal Status of the Military Surgeon, by Major J. Adelphi Gottlier; Camp Cooking Stoves, by Lieutenant George H. Halberstadt. Several of these papers are illustrated with excellent cuts. Some of them were followed by animated discussion.

SYNOPSIS OF CLINICAL SURGERY, during the service of Samuel H. Pinkerton, M.D., Surgeon to the Holy Cross Hospital. By FRANKLIN A. MEACHAN, A.B., M.D., Assistant Surgeon to the Holy Cross Hospital, Salt Lake City, Utah, 1893.

A pamphlet of 145 pages, comprehending reports in detail of a considerable number of particularly interesting cases, with illustrations, and many of more ordinary character, but all of interest to the practical surgeon.

THE PSYCHIC LIFE OF MICRO-ORGANISMS. By ALFRED BINET. Paper, 12mo, pp. 135. Price, 25 cents. Chicago: The Open Court Publishing Co.

A particularly interesting little book on the very lowest class of living things, describing their inherent properties and their aggregate relations to all animated nature. Agreeably to the now accepted ideas of evolution, all higher animals, including man, are mere aggregates of colonies of micro-organisms, every one of which organisms is endowed with psychical attributes necessary to its own maintenance. This book describes how these organisms sustain themselves, search for and seize food, fly from poisons, construct the cells of the tissues of higher animals, and maintain vitalism.

WEEKLY ABSTRACT OF SANITARY REPORTS, issued by the Surgeon-General of the U. S. Marine Hospital Service, Vol. VIII., for the year 1893. A volume of 1300 pages text, and an index of 40 pages, of great value to sanitarians as a reference book comprising the data of the outbreaks and spread of epidemics—particularly of cholera—abroad during the year.

TRANSACTIONS OF THE AMERICAN DERMATOLOGICAL ASSOCIATION, 1893, George T. Jackson, M.D., Secretary, New York.

A pamphlet of 80 pages, comprising papers and reports: Cosmetics, by Dr. R. B. Morrison; Rhinoscleroma, by Dr. George Thomas Jackson; Sclerodermo, by Dr. William T. Corlett; Tuberculosis of the Skin Simulating Lupus, by Dr. W. A. Hardaway; Lupus Erythematosus as an Imitator of Dermititis, by Dr. H. Radcliff-Crocker; Treatment of Itching, by Dr. E. B. Bronson; Angiokeratoma, by Dr. Joseph Zeisler; Pathology of Acne Varioliformis Hebsæ, by Dr. J. A. Fordyce; and discussions.

TREATMENT OF TYPHOID-FEVER. By D. D. STEWART, M.D., Lecturer of Clinical Medicine, Jefferson Medical College; Physician to the Medical Dispensary of the Episcopal Hospital, Philadelphia, etc. Paper, 12mo. Price, 25 cents. Detroit: George H. Davis.

A monthly issue of the "Physician's Leisure Library Series," comprising the prophylaxis, general management, specific and antiseptic treatment, and the treatment of special symptoms and complications of typhoid-fever. While there appears to be nothing that is new in this little volume, it is, nevertheless, a useful and commendable summary, evidently based upon a thorough study of a large amount of literature on the subject during recent years.

THE PHYSICIAN'S BEDSIDE RECORD, WITH DIETARY. By GIDEON C. SEGUR, M.D., published by the Plimpton Manufacturing Company, Hartford, Conn., is a ten-cent booklet, containing, besides head-lines and record-spaces, a number of useful receipts for preparing food and ptisans for the sick.

NOTES AND NOTICES.

ACROSS ASIA ON A BICYCLE.—June 23d, 1890, two young men, Messrs. Allen and Sachtleben, set out from New York

on one of the most remarkable journeys of the century. Three years later, lacking twenty days, they returned to New York by way of San Francisco, having encompassed the world on bicycles. They travelled by this method no less than 15,844 miles, the largest continuous land journey ever made around the world. They made copious notes of scenes and events, and took more than 2500 photographs, and since their return have written a graphic account of their journey from Constantinople to Pekin. This will be published in the *Century*, already begun in the May number. The story will be replete with curious and startling adventures, and will be illustrated with views of scenery, etc., never before published.

HONOLULU SCHOOLS.—Honolulu has good schools and churches, a college, a public library, street cars, electric lights, good markets and commercial houses, a well-managed telephone system, a railroad, daily newspapers, beautiful sea-bathing and a healthful climate, as well as its refined and agreeable society. It has also a fine harbor, chiefly formed by the coral reef which surrounds most of the island of Oahu, on whose southwestern side Honolulu is situated. The northwestern coast of Oahu is fringed by a range of steep mountains. These catch the moisture and send down their streams to water the fertile plain which makes the larger part of the island a garden where all the fruits and plants of semi-tropical climes can easily be made to grow.—*From "A Glimpse of the Hawaiian Islands," by Alice Walbridge Gulick, in the May number of the Review of Reviews.*

THE WORKING GIRLS OF LARGE CITIES form a most striking, interesting, and picturesque part of the people. Driven by natural causes into semi-public places, they hold the points thus gained with all simplicity. There is no pose, no glorification of their position. Necessity has sent them out into the paths they follow; by their own wits and through their own efforts they hold the right of way. In a sense, every man's hand is against them. They alone must guard their own interests, defend their individual rights.—*From "Working-Girls' Clubs," by Clara S. Davidge, in the May Scribner.*

CHARLESTON, S. C., IN 1861.—Just before the breaking out of the War of the Secession, the people of Charleston established a system of public schools, and put them in charge of teachers from the North. One of these teachers has described her experiences during that period, laying stress upon her personal relations with the Southern people. This article, by Miss Anna C. Brackett, appears in *Harper's Magazine* for May.

THE "GRAND OLD MAN" OF MEDICINE.—The *Medical Press and Circular* gives a new title to the Autocrat of the Breakfast Table in the following bit of news. It would lead its readers, however, to infer by analogy that Sir Spencer Wells had written the poems of Thomas Hood :

" The ' Grand Old Man' of medicine seems to be Dr. Oliver Wendell Holmes. The College Club, of Boston, recently gave a reception in his honor, and about five hundred persons were presented to him. He received them as he sat ' in a laurel-decorated chair under a bower of palms.' During the course of the proceedings Dr. Holmes recited 'The Last Leaf,' ' Dorothy Q.,' and ' The Chambered Nautilus,' all of which must have been intently listened to. Truly, we have no one in this country, of similar standing belonging to the profession, who could perform such a feat. Fancy Sir Spencer Wells, for example, reciting ' The Dream of Eugene Aram ' at the *conversazione* of the Medical Society !"

SPECIALISM quickens and intensifies thought in one direction in the same ratio that it decreases quickness of perception in others. For this reason many specialists are apt to attribute a majority of diseases to reflex action produced by lesions incident to their specialty.

To avoid this narrowing influence it is best for the would-be specialist to devote a number of years—at least ten—to general practice to ascertain in which direction his talents and inclination most strongly lead him, and then to thoroughly master the specialty of his adoption.

In this way he will secure a broad understanding of general pathology, which will stand him in good stead and prevent sporadic attacks of mental hemiopia.—*Medical Compend.*

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